

**User Participation in the Evaluation of the Quality of
Knowledge in Professional Online Communities: A
Motivational Process**

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Table of Contents

List of Figures	V
List of Tables	VI
List of Abbreviations	VII
Attestation of Authorship.....	VIII
Acknowledgement	IX
Abstract.....	X
CHAPTER One: Introduction	1
1.1 Background of the Study.....	1
1.2 Motivation and Significance of the Study.....	2
1.3 Research Objective and Research Questions	3
1.4 Research Design.....	6
1.5 Outline of the Thesis	7
CHAPTER Two: Literature Review	9
2.1 Chapter Overview	9
2.2 Basic Concepts	11
2.2.1 Knowledge	11
2.2.2 Professional Online Communities	11
2.3 Mechanisms for Evaluating the Quality of Knowledge Contributions	15
2.3.1 The Emergence of User Involvement in the Evaluation of the Quality of Knowledge Contributions	15
2.3.2 Importance of the User Evaluation Mechanism.....	16
2.3.3 Implementations of the User Evaluation Mechanism	17
2.4 Self-Determination Theory	21
2.4.1 Various Types of Motivation	22
2.4.2 A Motivational Process.....	24
2.4.3 Motivational Orientation.....	25
2.5 User Motivation in Professional Online Communities	26
2.6 Social Factors Relating to the User Evaluation Mechanism	30
2.6.1 User Evaluation as a Social Exchange	30
2.6.2 User Evaluation as Community Commitment	32
2.7 Summary of Chapter Two	34

CHAPTER Three: Theoretical Framework and Hypotheses	36
3.1 Chapter Overview	36
3.2 A Motivational Process for this Study	36
3.3 The Development of Hypotheses and the Research Model	38
3.3.1 Motivation and Behavioural Intention	38
3.3.2 Social Factors and Motivation	39
3.3.3 The Moderating Role of Knowledge Self-efficacy	44
3.3.4 Control Variables	45
3.4 Summary of Chapter Three	47
CHAPTER Four: Research Methodology	48
4.1 Chapter Overview	48
4.2 Research Paradigm	49
4.3 Research Method	50
4.4 Data Collection Methods	53
4.4.1 Web-Based Survey	53
4.4.2 Unit of Analysis and Time Horizon	54
4.4.3 Sampling	54
4.4.4 Ethical Considerations	59
4.5 Development of a Survey Instrument	60
4.5.1 Operationalisation of Constructs	60
4.5.2 Development of Measurement Items	63
4.5.3 The Survey Questionnaire	64
4.5.4 Survey Instrument Evaluation and Refinement	64
4.6 Survey Administration	70
4.7 Data Analysis Techniques	70
4.7.1 Structural Equation Modelling	71
4.7.2 Data Screening	72
4.7.3 Measurement Model Specification	74
4.7.4 Validating the Measurement Model	75
4.7.5 Validating the Structural Model	80
4.8 Summary of Chapter Four	83

CHAPTER Five: Data Analysis and Results	85
5.1 Chapter Overview	85
5.2 Data Screening	86
5.2.1 Missing Data	86
5.2.2 Outlier Analysis	86
5.2.3 Normality Analysis	89
5.2.4 Homoscedasticity	91
5.2.5 Linearity	92
5.3 Descriptive Statistic	92
5.4 Estimation Methods	94
5.5 Measurement Model Assessment	94
5.5.1 Model Fit	95
5.5.2 Convergent Validity	95
5.5.3 Discriminant Validity	95
5.5.4 Construct Reliability	97
5.5.5 Multicollinearity	98
5.6 Common Method Bias	98
5.7 Structural Model Validation	100
5.7.1 Structural Model Evaluation	100
5.7.2 Testing Control Variables	103
5.7.3 Examining the Hypothesised Relationships	105
5.7.4 Coefficient of Determinations	106
5.7.5 Testing the Moderation Effect	107
5.7.6 Hypotheses Testing Results	108
5.8 Summary of Chapter Five	111
CHAPTER Six: Discussion of Results	112
6.1 Chapter Overview	112
6.2 Key Findings	112
6.3 A Motivational Process	114
6.4 The Role of Motivation in Behavioural Intention	115
6.5 The Role of Social Factors as Antecedents of motivation	116
6.6 Summary of Chapter Six	120

CHAPTER Seven: Conclusions	121
7.1 Summary of the Study.....	121
7.2 Theoretical Implications.....	122
7.3 Practical Implications.....	125
7.4 Limitations of the Study.....	127
7.5 Implications for Further Research.....	128
7.6 Concluding Remarks	129
References.....	132
Appendices.....	149
Appendix A. Summary of Key Studies on the Role of Motivation in User Participation in Professional Online Communities	149
Appendix B. Summary of Key Studies on the Role of Social Factors in User Participation in Professional Online Communities	151
Appendix C. Ethics Application Approval.....	155
Appendix D. List of Selected Professional Online Communities	157
Appendix E. Participants Information Sheet.....	158
Appendix F. Contact with Administrators of Professional Online Communities ...	160
Appendix G. Invitation Message.....	161
Appendix H. Survey Questionnaire.....	162

List of Figures

Figure 1.1. Outline of the thesis	8
Figure 2.1. An overview of Chapter Two and Chapter Three	10
Figure 2.2. Knowledge-centred user roles in a professional online community.....	13
Figure 2.3. An example of the user evaluation mechanism	18
Figure 2.4. Various types of motivation within self-determination theory.....	22
Figure 2.5. The motivation process.....	25
Figure 3.1. A motivational process proposed for this study	38
Figure 3.2. The research model and the hypothesised relationships.....	47
Figure 4.1. An overview of Chapter Four	48
Figure 4.2. Sources of errors in survey research and how to eliminate them	52
Figure 4.3. Overview of survey instrument development procedure.....	61
Figure 4.4. The web-based survey questionnaire design	67
Figure 5.1. An overview of Chapter Five	85
Figure 5.2. Results of the original structural model.....	101
Figure 5.3. Results of testing the final respecified structural model.....	102
Figure 5.4. Structural model with control variables.....	104
Figure 6.1. A motivational process underlying user intention toward becoming involved in the evaluation of the quality of knowledge contributions in professional online communities	115

List of Tables

Table 2.1. Advantages and Disadvantages of the User Evaluation Mechanism.....	20
Table 4.1. Probability Sampling Designs.....	57
Table 4.2. Definitions of Constructs	62
Table 4.3. Items Related to Key Constructs in the Research Model.....	68
Table 4.4. A General Guideline for Assessing Model Fit.....	77
Table 4.5. Recommended Thresholds for Validity and Reliability Tests	80
Table 4.6. Data Analysis Summary.....	82
Table 5.1. Univariate Outliers Summary	88
Table 5.2. Summary of Normality Test	90
Table 5.3. Survey Participants' Demographic Information	93
Table 5.4. Professional Online Communities Usage	93
Table 5.5. Convergent Validity	96
Table 5.6. Discriminant Validity.....	97
Table 5.7. Construct Reliability	97
Table 5.8. Model Fit Indices for Original and Respecified Models.....	102
Table 5.9. Structural Model Control Variable Analysis	104
Table 5.10. Path Estimations.....	106
Table 5.11. Summary of Hypotheses Testing Results	110
Table 6.1. Summary of Key Findings and Research Questions.....	114

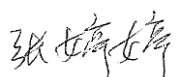
List of Abbreviations

ACC	affective community commitment
AM	autonomous motivation
AUT	Auckland University of Technology
AUTEC	Auckland University of Technology Ethics Committee
AVE	average variance expected
CBSEM	covariance-based equation modelling
CM	controlled motivation
CR	composite reliability
CT	commitment theory
INT	intention
KSE	knowledge self-efficacy
IS	information system
NCC	normative community commitment
REC	reciprocity
REP	reputation
SEM	structural equation modelling
SET	social exchange theory
SDT	self-determination theory
TIP	trust in peers
TIUE	trust in the user evaluation mechanism

Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

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Date: 21 November 2014

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Abstract

In a digital society, professionals increasingly seek knowledge from online communities to resolve problems that they encounter in the workplace. Despite the potential benefits to professionals and related community, there are concerns about the quality of users' knowledge contributions in this open environment. This dilemma makes it challenging for professional online communities to balance the need to provide users with easy access to high-quality user contributions while maintaining a large and useful knowledge repository. Evidence from prior research and current practice suggests that user collaboration in the evaluation of the quality of user contributed knowledge is an effective mechanism that can help users identify high-quality knowledge contributions. Particularly, useful collaborative evaluation is accomplished by means of user feedback in the forms of rating and ranking, among others. While prior research highlights the importance of active user participation in the evaluation activity, little is known about user motivation to perform this activity in professional online communities.

This study aims to investigate user motivation to participate in this evaluation activity. Drawing on self-determination theory, social exchange theory, and commitment theory, this study proposed an integrated research model to investigate the motivational process underlying users' willingness to take part in the evaluation of knowledge contributions in professional online communities. The motivational process highlights how reciprocity, online reputation, trust, and community commitment shape users' motivation which in turn influences users' behavioural intention.

The integrated research model was empirically validated using a dataset of 272 responses from 30 professional online communities. Structural equation modelling techniques were used to analyse the data. The results revealed that users' intention to evaluate the quality of knowledge contributions in professional online communities is primarily influenced by autonomous motivation or the reasons coming from inside the self, such as volition, psychological freedom, and reflective self-endorsement. In turn, autonomous motivation is affected by social factors including reciprocity, online reputation, trust in the user involvement mechanism, and affective and normative community commitments.

This study has both theoretical and practical contributions. In addition to enhancing the understanding of the strategic importance of active user participation in evaluating

knowledge contributions to professional online communities, this study shows the usefulness of a motivational process perspective in investigating user motivation to act in these communities. Specifically, such a motivational process involves a causal sequence from social factors through autonomous motivation to behavioural intention. Findings of this study also provide administrators of professional online communities with practical guidelines on how to encourage user evaluation of knowledge contributions.

CHAPTER One: Introduction

1.1 Background of the Study

In a digital society, professionals seek knowledge from online communities to broaden their professional knowledge or to solve problems that they encounter in the workplace. Professional online communities where professionals communicate and interact with each other to generate user-driven knowledge of a specific domain have been playing an increasingly important role in professionals' careers. For example, searching for work-related knowledge from professional online communities is the most frequent informal learning activity that professionals use (Lohman, 2009). In a 2012 survey conducted by Dimensional Research on how technology professionals value online communities, 75% of the participants reported that participating in online communities helped them do a better job and 71% stated that their participation helped their professional development.

Providing professionals with easy access to high-quality knowledge contributed by fellow users is important to the success and growth of professional online communities in the long run. This is because an important reason for professionals to use professional online communities is easy access to a large knowledge repository (Chen, 2007). More importantly, the quality of knowledge can affect users' initial adoption (Kuo & Lee, 2009), use (Kim et al., 2012), and continuous use (Chen, 2007) of a professional online community, as well as their use of the shared knowledge from the community (Zhang & Watts, 2008). In a highly competitive environment, the ability to attract people to join the community on a continuous basis is the key to the success of professional online communities (Farzan et al., 2011). However, the inability to retain those who have already become members threatens the sustainability of the community because when a number of members leave, it threatens the ability to build a reasonably sized high-quality knowledge repository. (Farzan et al., 2011).

Although having a large knowledge pool is highly desirable, a large number of user contributions make it challenging for a professional online community to ensure the provision of easy access to high-quality user contributions that are helpful for professionals within their work. In a typical professional online community, users are encouraged to freely share their knowledge and to contribute to the knowledge repository in professional online communities (Kang et al., 2007). A substantial increase in the

amount of knowledge contributions raises the danger of information overload and increases the variation in the quality of users' knowledge contributions (Chen, J. et al., 2011). Because of this, professional online communities have the dilemma of balancing the need to increase the volume of user contributions with the need to maintain the quality of those contributions.

In this circumstance, users may find it difficult to identify useful information from professional online communities. In a survey conducted by Dimensional Research (2012), 89% of participants reported that knowledge provided by professional online communities was reliable, accurate, and trustworthy, which was a notable decrease from 98% in 2007. Consequently, a large knowledge repository can make it difficult for professionals to search for useful user contributions in a professional online community. In some cases, professionals can be misled by poor quality or even incorrect user contributions.

1.2 Motivation and Significance of the Study

Professional online communities need to establish effective mechanisms to ensure that professionals can find high-quality knowledge contributions easily and efficiently. Empirical evidence confirms that assisting users in the judgement of the quality of knowledge affects their continuous participation in online communities in the form of knowledge seeking and knowledge sharing (Lattemann & Stieglitz, 2007; Manville & Ober, 2003; Markus, 2007).

Employing user feedback as a means of evaluating the quality of knowledge contributions is an effective and pragmatic approach for guiding users to identify relevant and high-quality knowledge contributions (Beschastnikh et al., 2008; Kayhan et al., 2013). Prior studies have indicated that users of professional online communities tend to rely on others' feedback (e.g., user comments and user ratings) as a valuable and intuitive indicator for assessing the quality and reliability of the content they are viewing (Chai et al., 2009; Sutanto & Jiang, 2013). Particularly, user feedback in the form of "voting", rating", "ranking", "liking", and similar forms are useful with less demand on users' cognitive efforts and time in identifying the quality of user contributions (Diakopoulos & Naaman, 2011; Jeon et al., 2006; Sutanto & Jiang, 2013). This is especially the case when user feedback is accumulated using sophisticated algorithms (Lee et al., 2009; Maleewong et

al., 2011). In this study, having users provide feedback can serve as an effective and pragmatic approach for the evaluation of the quality of user contributions and is referred to as a “user evaluation mechanism”.

Although strong user participation in the evaluation activity is critical to the successful implementation of the user evaluation mechanism, little is known about users’ motivation to participate in this activity. Users’ motivation to use professional online communities and to share their knowledge within communities has been intensively investigated by prior studies (e.g., Kankanhalli et al., 2005; Vuori & Okkonen, 2012; Wasko & Faraj, 2005). However, there is still a shortage of literature that focuses on user motivation to perform the evaluation activity. In addition, although the literature offers some insights into user motivation to give feedback in various forms in contexts of non-professional online communities such as e-commerce (Allam et al., 2012; Diakopoulos & Naaman, 2011; Hong & Park, 2011), the literature is inadequate to explain user motivation to give feedback as a means of assessing the quality of knowledge contributions in professional online communities.

The aim of this study is to investigate users’ motivation to participate in evaluating the quality of knowledge contributions by giving feedback in professional online communities. By highlighting the importance of user involvement in evaluating the quality of knowledge contributions in such communities, this study attempts to promote an understanding of user feedback as a feasible means of managing the quality of knowledge contributions. Given that the effective implementation of the user evaluation mechanism is beneficial for the success of a professional online community (Agichtein et al., 2008; Diakopoulos & Naaman, 2011), results of this study can provide the management of professional online communities with strategic insights into how to encourage user engagement in evaluating the quality of knowledge sharing for competitive advantage. Findings from this study may also be used to generate practical design guidelines to support and improve the effective implementation of the user involvement mechanism.

1.3 Research Objective and Research Questions

The objective of this study is to examine users’ underlying motivation to become involved in the evaluation of the quality of knowledge contributions in professional online

communities. Motivation theories (Ryan & Deci, 2002; Vallerand, 2000) provide theoretical foundations to understand people's motivation to engage in behaviours. For example, self-determination theory (Ryan & Deci, 2002) depicts a motivational process in which social factors influence motivation which in turn shapes behaviours. Within this process, motivation is viewed as a multifaceted concept and can be enhanced by individuals' perceptions of the social context for conducting activities. This motivational process is employed as an overarching theory to investigate user evaluation activity in professional online communities.

Extant literature on user motivation to participate in professional online communities can be categorised into two streams. The first stream focuses on the relationships between different types of motivation and behaviour (e.g., Ke & Zhang, 2010; Lin et al., 2013; Malhotra et al., 2008; Roberts et al., 2006; Wunderlich et al., 2013). Empirical evidence from this stream of studies shows that various types of motivation are predictive of user behaviour in professional online communities. In these studies, motivation is usually distinguished between intrinsic motivation and extrinsic motivation which, in some cases, is further defined according to various regulatory styles. The second stream theorises the relationships between social factors and different types of motivation (e.g., Hung et al., 2011; Jeon et al., 2011; Lin, 2007; Lou et al., 2013; Nov et al., 2010; Tong et al., 2007; Verhagen et al., 2012). These conceptual studies indicate that user motivation in professional online communities is closely related to a number of social factors.

This study concurrently and empirically examines the two stages of the motivational process underlying users' intention to perform the evaluation activity in one research model. To this end, a research question that guides this study is:

Research question: How users can be motivated to become involved in the evaluation of the quality of knowledge contributions in professional online communities?

Two sub research questions are:

Sub research question 1: How does motivation influence user intention to become involved with the evaluation of the quality of knowledge contributions in professional online communities?

Sub research question 2: How do social factors influence user motivation to evaluate the quality of knowledge contributions in professional online communities?

In particular, the first sub research questions are concerned about the role of autonomous motivation and controlled motivation, a distinction made on the basis of two types of motivational orientation in the motivational process. Prior studies have classified motivation based on either the goals of behaviour (e.g., Lin et al., 2013; Roberts et al., 2006) or the regulatory styles of behaviour (e.g., Ke & Zhang, 2010; Malhotra et al., 2008; Wunderlich et al., 2013). Self-determination theory (Deci & Ryan, 2012) and related studies (e.g., Gagné, 2009; Oyefolahan & Dominic, 2013; Oyefolahan et al., 2012) argue that autonomous motivation and controlled motivation also play an important role in the motivational process towards behavioural intention. While autonomous motivation refers to performing an activity for reasons coming from inside the self, such as volition, psychological freedom, and reflective self-endorsement, controlled motivation refers to performing an activity for reasons from outside the self, such as pressure and coercion to think, feel, or behave in particular ways (Deci & Ryan, 2012). Investigating motivation from a motivational orientation perspective is helpful for understanding motivation from the inner self of an individual and useful for investigating the role social factors play in the motivational process of an individual in the context of professional online communities.

An empirical examination of the effect of social factors on motivation is necessary to deepen an understanding of the role of social factors within the motivational process. The literature suggests that social factors play an important role in explaining user participation in activities involving the knowledge repository in professional online communities (e.g., Beenen et al., 2004; Chiu et al., 2006; Fang & Neufeld, 2009; Hew & Hara, 2007; Lin, 2007; Tsai et al., 2012). While user engagement in the assessment of the quality of knowledge contributions occurs in a social context, this behaviour involves interaction with the community and benefits the community in a voluntary fashion. In this sense, examining the effect of social factors on motivation deepens the understanding of how user motivation to evaluate the quality of knowledge contributions can be enhanced in the social contexts of these communities. As a result, useful practical implications for improving the design of online communities in order to encourage active user participation in the evaluation activity may be generated (Hung et al., 2011).

1.4 Research Design

To answer the proposed research questions, this study follows a positivistic approach. Drawing on self-determination theory, social exchange theory, and commitment theory, an integrated research model was proposed to empirically evaluate the relationships associated with the motivational process underlying users' intention to evaluate the quality of knowledge contributions in professional online communities. Based on self-determination theory, two types of motivation are included in the research model: autonomous motivation and controlled motivation. Based on social exchange theory and community commitment theory, six social factors are incorporated into the research model, including reciprocity, online reputation, trust in peers, trust in the user evaluation mechanism, and affective and normative community commitment.

Quantitative data was collected using a web-based survey from users of 30 professional online communities that are open for the public to freely access regardless of being established by organisations or professional associations. The survey instrument was a self-administrated questionnaire which contained questions regarding each construct in the research model measured using validated items from related literature. The survey instrument was examined and refined based on feedback from a group of expert and a pre-test. This study chose to conduct the survey in 30 selected professional online communities focusing on different professions for three reasons. First, these communities had active user participation. Second, they offered feedback systems for users to evaluate the quality of knowledge contributions. Third, the researcher was permitted to post the survey invitation message in these communities.

The data were analysed using structural equation modelling techniques following the procedures suggested by Hair et al. (2010). Specifically, AMOS Version 22 was used to assess the reliability and validity of the measurement model and the hypothesised relationships in the structural model. The results of testing the research model show that reciprocity, online reputation, trust in the user evaluation mechanism, and affective and normative community commitment enhance autonomous motivation which in turn affects users' intention to become involved with the evaluation of knowledge contributions in professional online communities. These results provide empirical evidence of an integrated two-stage motivational process underlying user participation in the evaluation activity. Findings from this study are discussed in the light of current literature, leading to discussions on the contributions that this study makes to research and practice alike.

1.5 Outline of the Thesis

The thesis is organised as follows (as also shown in Figure 1.1 below):

Chapter One elaborates the background, motivation, and significance of the study. The research objective and research questions of this study are then presented. They are followed by brief descriptions of the research methodology and key terminologies.

Chapter Two presents a discussion of relevant literature to aid understanding of user involvement in the evaluation of knowledge contribution quality. It also discusses self-determination theory, social exchange theory, and commitment theory which form the foundation of this study. In particular, the roles motivation and social factors play in the motivational process are discussed.

Chapter Three theories how self-determination theory, social exchange theory, and commitment theory help explain the motivational process underlying user motivation to participate in the evaluation of the quality of knowledge contributions in professional online communities. An integrated research model is then proposed together with the development of a set of research hypotheses.

Chapter Four explains the methodology employed in this study. The criteria for selecting data collection methods and data analysis techniques are reported, together with considerations on how to increase the reliability and validity of this study. The details of the instrument development process and survey procedures are described in this chapter.

Chapter Five reports the data analysis procedures and results. A detailed description of data preparation is first presented, followed by the examination of the measurement model and the testing of the structural model. The research hypotheses are also tested based on the results of testing the structural model.

Chapter Six discusses the main findings rising from data analysis results. The research questions are answered and discussion is provided on the contributions of this study in light of the theories and prior research.

Chapter Seven concludes the thesis by presenting a summary of the main findings from this study. The main theoretical and practical implications of this study are discussed, followed by the limitations and future research avenues.

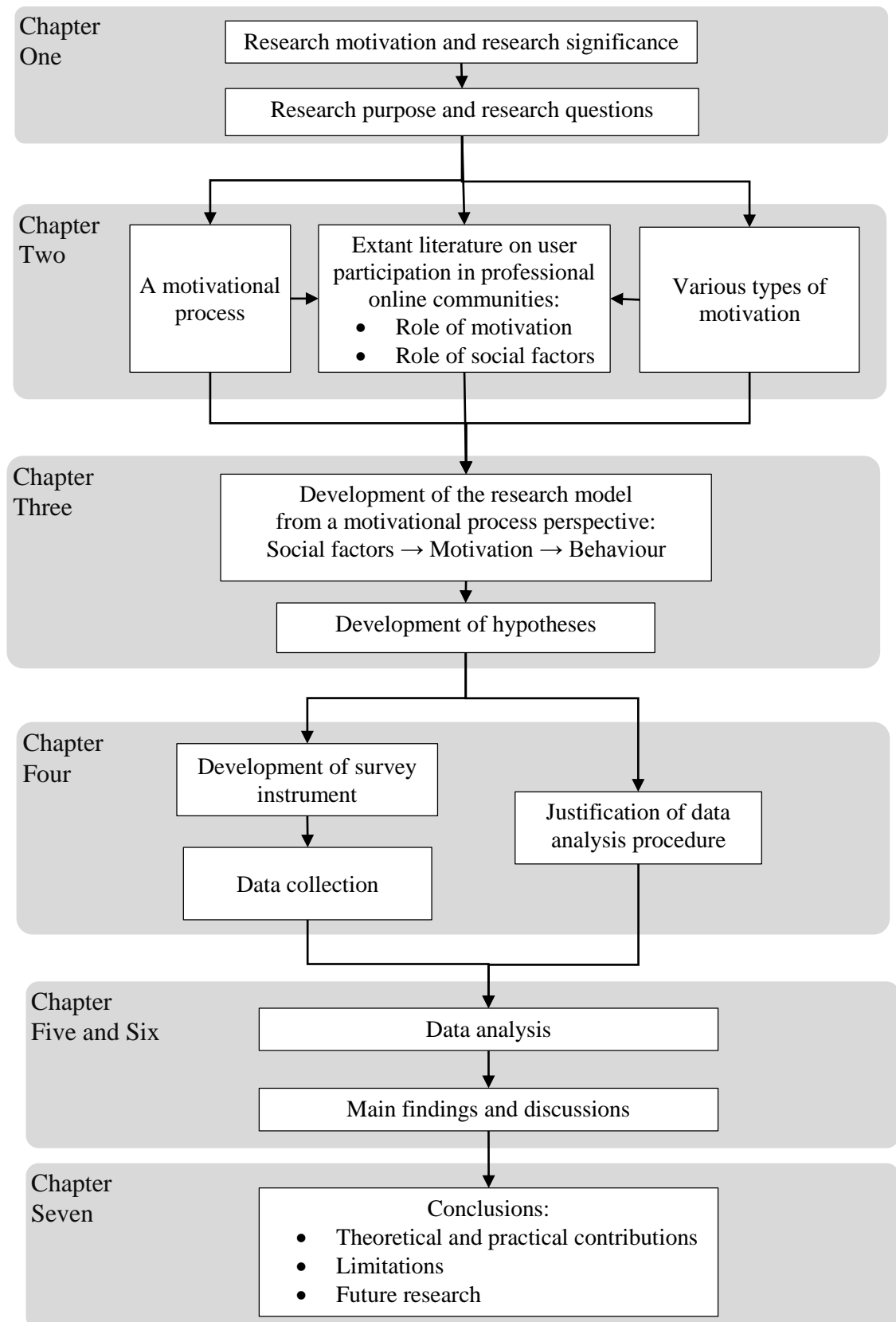


Figure 1.1. Outline of the thesis

CHAPTER Two: Literature Review

2.1 Chapter Overview

This chapter presents the background and literature related to an understanding of user motivation to participate in the evaluation of the quality of knowledge contributions in professional online communities. To provide the contextual background, this chapter introduces the roles of users and their knowledge contributions in a professional online community. A discussion follows on the feasibility of encouraging users to help with the evaluation of the quality of knowledge contributions. Next, this chapter introduces self-determination theory to provide theoretical arguments relating to an understanding of the user motivational process and the role of social factors in professional online communities. Finally, this chapter proposes a theoretical framework describing the motivational process of user participation in the evaluation of knowledge sharing quality. An overview of the development of the theoretical framework is depicted in the upper part of Figure 2.1 followed by the research model development process.

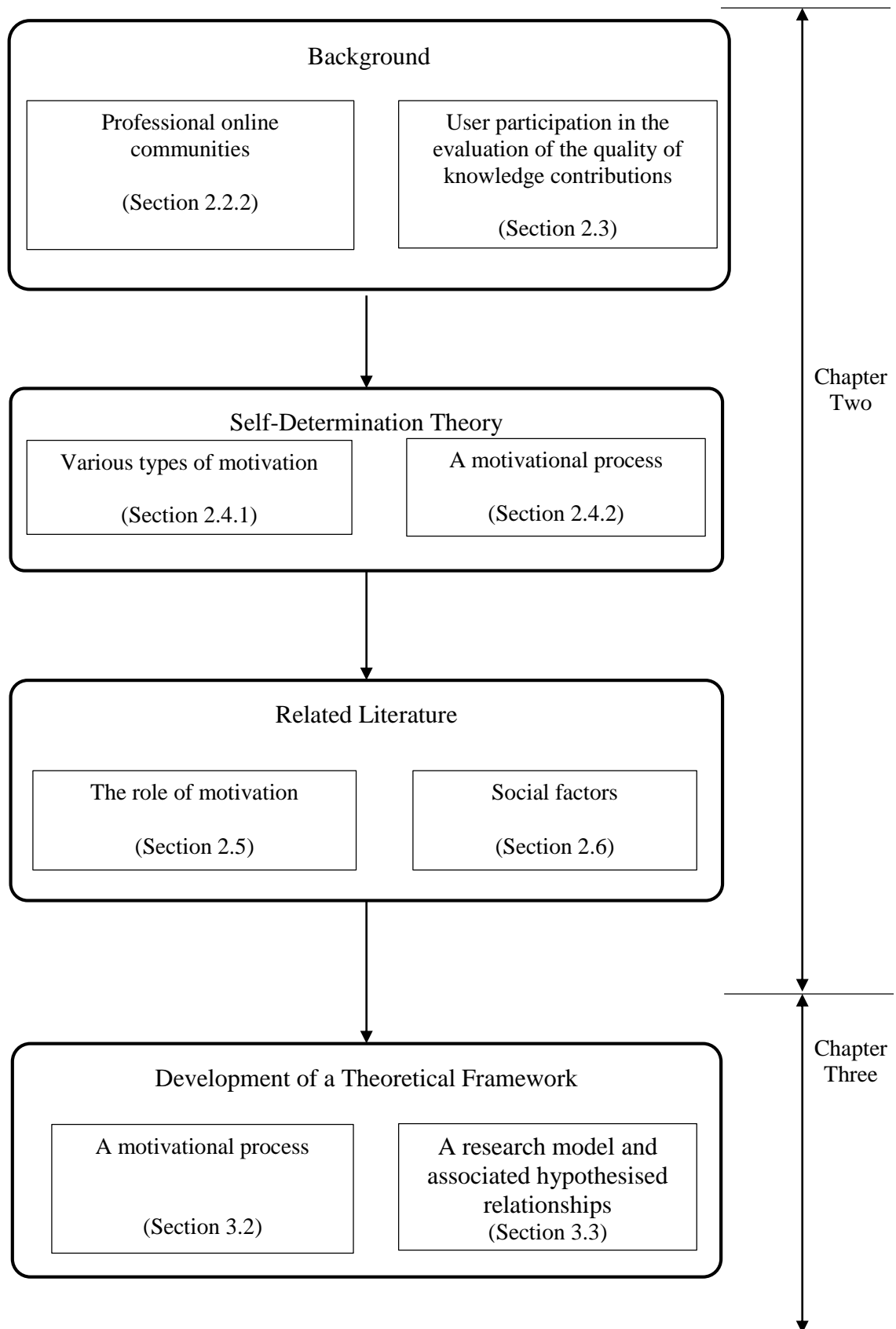


Figure 2.1. An overview of Chapter Two and Chapter Three

2.2 Basic Concepts

2.2.1 Knowledge

The most common means of defining knowledge is distinguishing it from data and information (Ragab & Amr, 2013). It has been widely accepted that data consists of unprocessed raw representations of reality; information is data that has been processed in some meaningful ways; and knowledge is information that has been combined with experience and judgement (Faucher et al., 2008). This distinction recognises knowledge as the top tier in a three-level hierarchy (Ragab & Amr, 2013).

However, despite of its wide acceptance in the literature, the distinction between information and knowledge in this classical hierarchy is still under debate. For example, Tuomi (1999) argues that there exists a reverse hierarchy where one must possess knowledge to create information. Other authors point out that information and knowledge are not radically different from each other but represent different aspects of the same concept when interpreted in certain contexts (Blumentritt & Johnston, 1999). Instead, the distinction between information and knowledge is vague depending on the degree of the “organisation” and the “interpretation” (Bhatt, 2001, p. 69). When information is processed in one’s mind, it becomes knowledge. Once knowledge is articulated for transmission, it becomes information.

It is important to note that it is not the intention of this study to join in the ongoing debate on the relationship between information and knowledge (e.g., Faucher et al., 2008; Hicks et al., 2006; Ragab & Amr, 2013). Rather, for consistency, the term knowledge is used through this study. In the context of professional online communities, users share and exchange their knowledge and seek information that is useful for doing their jobs (Lohman, 2009), suggesting the content of these communities is knowledge.

2.2.2 Professional Online Communities

A professional online community is defined as a cyberspace “supported by computer-based information technology, centred upon communication and interaction of participants to generate member-driven knowledge of a specific domain, and resulting in a relationship being built” (Chen, 2007, p. 453). Many alternative terms have been used to describe an online community of this kind; for example, an electronic network of

practice (Wasko & Faraj, 2005), an electronic knowledge repository (Kankanhalli et al., 2005), and a professional virtual community (Cheung & Lee, 2007). Despite their differences, these alternative terms share the contention that supporting technologies, users, and shared knowledge are three primary elements that are central to the success of professional online communities.

This study particularly focuses on those professional online communities that are open for the public to freely access regardless of being established by an organisation or a professional association or by members from diverse organisations. Online communities can be member-initiated or organisation-sponsored according to the establishment of online communities (Porter, 2004). Member-initiated professional online communities usually are open to anyone. However, some organisation-sponsored online communities are designed to be used by the organisation's employees only and some are established to maintain relationships between the organisation and its partners and customers. These types of private professional online communities are not considered in this study because they are not openly accessible to people who are not employees, partners, or customers of the corresponding organisation. Some examples of professional online communities referred to in this study are Slashdot (<http://slashdot.org>), organisation-sponsored communities like SAP Community Network (www.sap.com/communities/hub.html), or a part of an organisation-sponsored community with a wide range of topics like a sub category of Yahoo!Answers.

Supporting technologies

Unlike the practices in physical communities, the communication and interaction among members in professional online communities are mediated by technologies such as the Internet. Because of this, online communities allow their members to interact with each other through communication media without being bounded by physical attachment or communication (Preece, 2001). Thus, professional online communities consist of not just the social element, or the technical element, but the phenomena that emerge when the social and the technical elements interact with each other (Gregor & Jones, 2007). While the social element is concerned with the needs of individuals and those of the community, the technical element is concerned with how to adapt the technology to social practices. In other words, the underlying technologies should not constrain the sociability of the social system, but support and enhance social interactions (Patel 2009).

Users

Like any physical communities, users are the ones who keep a professional online community alive (Chen, 2007). According to Preece and Shneiderman (2009), users can assume a number of roles that enable them to take part in various activities in a professional online community. Users usually first visit an online community as readers who seek knowledge from the community and later on as contributors who add to the existing knowledge pool by sharing their knowledge. Some may go on to collaborate with others in contributing to the community and to take on a leadership role in a discussion in an attempt to help with the maintenance of the community. These roles of users are depicted in Figure 2.2.

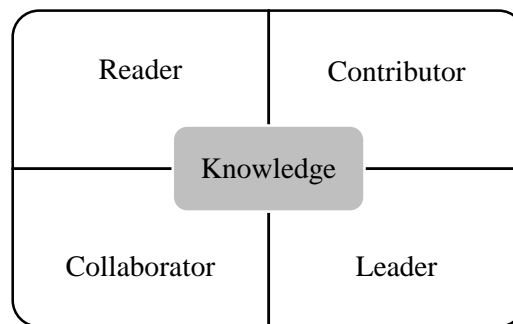


Figure 2.2. Knowledge-centred user roles in a professional online community
(Adapted from Preece and Shneiderman [2009])

As the definition of a professional online community suggests, the primary theme of these communities is their knowledge repositories, regardless of the roles that users play and the activities that they take part in. Nonetheless, it is worth noting that user networking is another key activity in which one can take part in professional online communities. Although a considerable number of studies have been conducted to promote our understanding of user networking in these communities, in most cases, user networking originates from their knowledge sharing activities. For example, Ganley and Lampe (2009) and Panzarasa et al. (2009) consider user networking to be a by-product of knowledge-centred activities in professional online communities. They explain that relationship building in these communities should be a result of sharing knowledge. The importance of knowledge in a professional online community is discussed in detail in the following section.

User Contributed Knowledge

An important reason for professionals to use professional online communities is the easy access to a large knowledge repository (Chen, 2007). Users seek knowledge from professional online communities to reap personal gains. These include satisfying their specific information need to obtain relevant, high-quality and useful knowledge to accomplish their tasks more effectively, to improve their individual capability, and to broaden their knowledge (Chen & Hung, 2010; Sutanto & Jiang, 2013). Thus, the open access of a professional online community should encourage users to freely seek knowledge and share their knowledge to contribute to the knowledge repository (Kang et al., 2007).

From the perspective of a community, a rich knowledge pool features the competitive advantage of a professional online community (Chen, 2007). The primary goal of a professional online community is to provide a platform for professionals to share and exchange their knowledge in a particular field. In a highly competing environment, the ability to attract people to join the community on a continuous basis is the key to its success (Farzan et al., 2011). However, the inability to retain existing members can, in the long run, threaten the sustainability of the community (Farzan et al., 2011). Thus, promoting effective knowledge sharing and seeking to retain users is fundamental to the competitive advantage of a professional online community (Chen, 2007).

Despite the usefulness of a large pool of knowledge, the fast growth in the volume of knowledge raises the concern of information overload and the uncertainty of the quality of the knowledge (Chen, J. et al., 2011). This is because a large volume of knowledge may increase the time needed for users to locate useful knowledge (Bock et al., 2006; Zheng et al., 2010) and the possibility of users missing relevant knowledge (Sutanto & Jiang, 2013). For example, in a survey conducted by Dimensional Research (2012) the majority of respondents (i.e., 89%) stated that the information contained in online communities was reliable; however, the percentage had dropped by nearly 10% compared to 98% in 2007. In some cases, users may be misled by low-quality information. Consequently, they may stop using these communities or decrease their use over time (Hercheui, 2010), which makes it challenging for professional online communities to survive in the long run.

Quality of users' knowledge contributions has been recognised as an important factor contributing to the success and healthy growth of professional online communities (Ala-

Mutka et al., 2009; Iriberry & Leroy, 2009). This is because the quality of knowledge can affect users' initial adoption (Kuo & Lee, 2009), use (Kim et al., 2012), and continuous use (Chen, 2007) of a professional online community, as well as their use of the shared knowledge from the online community (Zhang & Watts, 2008). However, a large number of user contributions make it challenging for a professional online community to control the quality of these contributions (Wasko & Faraj, 2005). This study attempts to offer a better understanding of mechanisms that assist users to identify and obtain high-quality knowledge contributions in a vast knowledge repository.

2.3 Mechanisms for Evaluating the Quality of Knowledge Contributions

2.3.1 The Emergence of User Involvement in the Evaluation of the Quality of Knowledge Contributions

Management teams of some professional online communities have established mechanisms to ensure the provision of quality user contributions. For example, some online communities specify terms and guidelines for sharing knowledge to encourage users to make high-quality contributions. Other online communities appoint a small group of users to become managers and moderators and give them privileges to safeguard the quality of shared knowledge (Waterson, 2006). These selected users are responsible for screening the knowledge contributed by other users (Chen, J. et al., 2011). They can, for example, remove spam and keep user contributions on topic. Having a small group of moderators may function well when a community is relatively small. However, as the community grows, its disadvantages start to emerge, such as a heavy workload and the fairness and transparency issues of the moderation process. In addition, having a small group of users moderate the content may impose excessive control over users' behaviours, leading to participants' loss of interest in the communities (Kang et al., 2007).

After the knowledge contributed by users is made available to others, the evaluation of the quality of the knowledge contributions is in the hands of knowledge seekers. Several studies propose quality indicators and metrics to assess the quality of knowledge contributions in online communities. For example, Knight and Burn (2005) present a comprehensive review of online information quality assessment frameworks. Their results show that criteria frequently used by knowledge seekers include believability,

concise representation, interpretability, relevancy, reputation, understandability, and value-adding. Knowledge seekers need to have a certain level of information skills and expertise in that particular domain to be able to use these criteria successfully (Lucassen & Schraagen, 2011).

Building upon Knight and Burn's (2005) work, Chai et al. (2009) review 19 information quality assessment frameworks. They find that other users' feedback (e.g., user comments and user ratings) appears to be overwhelmingly preferred over other criteria and the mostly used criterion by knowledge seekers to assess information quality. User feedback is usually presented as an accumulated result of assessing the quality of knowledge contributions using a combination of criteria (Chai et al., 2009). Thus, other users' feedback provides a valuable and intuitive indicator for knowledge seekers to assess the quality of knowledge contributions using minimal cognitive effort and time (Sutanto & Jiang, 2013).

Consequently, employing user feedback as a means of evaluating the quality of knowledge contributions is likely to be an effective and pragmatic approach for guiding users to search for relevant and high quality knowledge contributions. In this study, this means is referred to as a 'user evaluation mechanism'. Active user engagement in evaluating knowledge contribution quality can benefit a professional online community in a number of ways, which are presented in the following section.

2.3.2 Importance of the User Evaluation Mechanism

Getting users involved in the evaluation of knowledge contribution quality contributes to the success of a professional online community. A professional online community that assists users in the judgement of the quality of knowledge affects users' continuous participation in online communities including knowledge seeking and knowledge sharing (Lattemann & Stieglitz, 2007; Manville & Ober, 2003; Markus, 2007). When users view an act of giving feedback as an empowerment in knowledge contribution management for a community, they are likely to participate more frequently in other activities in the community (i.e., reading, collaborating, leading) (Arrasvuori et al., 2008; Farzan et al., 2009; Preece & Shneiderman, 2009; Ye & Fischer, 2007).

Allowing users to collaboratively evaluate the quality of knowledge contributions eases the concern of relying on a small group of users to do the evaluation (Arrasvuori & Olsson, 2009). Broad involvement enables users to take care of themselves and solve problems on their own rather than delegating the activities to a small group of users (Kayhan et al., 2013). This avoids creating tensions between those who have the privilege to evaluate the shared knowledge contributions and those who make those contributions (Forte & Bruckman, 2008). Redistributing the right to maintain a healthy community from a privileged group of users to all members creates a friendly environment in which all users feel comfortable to participate in a community (Forte & Bruckman, 2008; Konieczny, 2010).

Furthermore, feedback from other users potentially enhances the perception of the value of the knowledge pool. It also saves users time and effort in obtaining useful and helpful information. Hence, users value feedback from other users. For example, in their study on Wikipedia, Schroeder and Wagner (2012) found that 83% of participants considered other users acting as guardians of articles to be a valuable content management mechanism. Around half of participants in their study merited the discussion on articles and the opportunity to collaborate with other users. For that reason, users value feedback from other users because feedback helps them to screen the quality of information (Sutanto & Jiang, 2013), save their knowledge search and evaluation process (Poston & Speier, 2005), and increase the likelihood of the use of knowledge found in online communities (Zhang & Watts, 2008). For example, social bookmarking sites such as Digg and Delicious list information that receives the most votes on their homepages, making it easy for people who search for information on that topic.

2.3.3 Implementations of the User Evaluation Mechanism

The user evaluation mechanism can be implemented in different ways. One form of user involvement is to allow users to write review comments on quality of knowledge contributions (Kayhan et al., 2013). Reviews and comments written by users are useful for others to identify quality content in organisational repositories (Kayhan et al., 2013). Other simple forms of user evaluation are rating, voting, and ranking, among others, which are also useful for predicting the quality of answers (Jeon et al., 2006) and for managing the quality of user comments (Diakopoulos & Naaman, 2011). Figure 2.3 gives an example of the user involvement mechanism.

This study chooses to focus on a user evaluation mechanism by means of rating, voting, ranking, and other similar processes instead of comments for two reasons. First, the use of voting, rating, and ranking requires minimal user cognitive effort and time, thus encouraging broader participation in the evaluation. Giving a rating, voting, or a ranking is easy for most users to provide in their feedback. For example, a “star rating” requires one single click. However, writing comments requires additional effort and time to put arguments in a textual format.

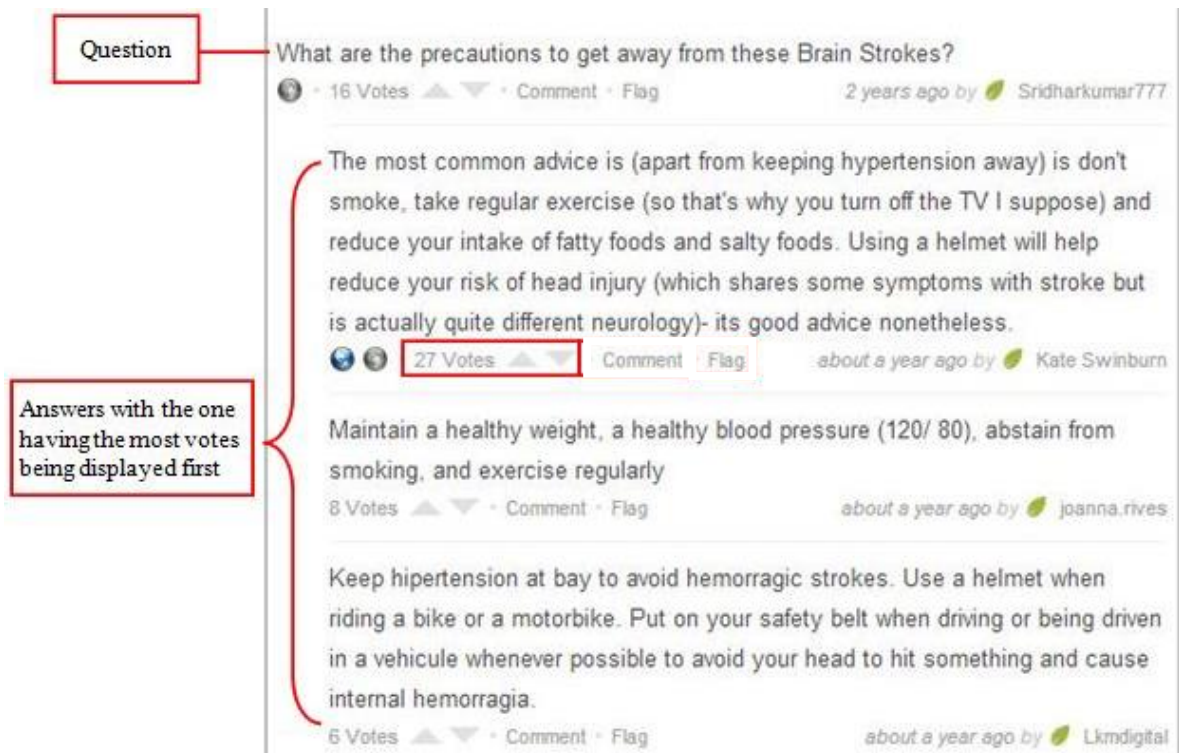


Figure 2.3. An example of the user evaluation mechanism
(Source: <https://www.khanacademy.org/>, accessed on 29 May 2014)

Rating, voting, and ranking are usually presented in simple and intuitive ways, thus they are more likely to be adopted by knowledge seekers (Liu et al., 2011). For example, results from all users who have rated the quality of knowledge contributions can be aggregated and presented by an overall rating result. An overall rating of a contribution is a convenient way for knowledge seekers to develop a general idea of what others think of the quality of the knowledge. For example, ratings on knowledge contributions in a professional online community are found to be helpful for subsequent knowledge seekers in guiding their search for high-quality knowledge contributions (Poston & Speier, 2005; Sutanto & Jiang, 2013).

Interpreting the results from written comments to evaluate the quality of knowledge contributions requires more effort from knowledge seekers, possibly resulting in infrequent use of the comments. This is because knowledge seekers need to spend a significant amount of time reading comments to form a general understanding of what others think about the knowledge contributions. Knowledge seekers may also need other contextual cues, such as user expertise (Lucassen & Schraagen, 2011), contributor's reputation (Chen, B. C. et al., 2011), and source credibility (Lucassen & Schraagen, 2011), to assist them with the quality evaluation. Because using these criteria requires knowledge seekers to have expertise in the particular area, they tend to find written comments less attractive when judging the quality of knowledge contributions (Lucassen & Schraagen, 2011).

Second, the evaluation results from a large number of user ratings, votings, and rankings are likely to reflect the true quality of the knowledge as a result of the "wisdom of the crowd" (Surowiecki, 2005). This is because a decent number of user rating, voting, and ranking leads to a wide range of evaluation results from many users and the aggregated results might be a reliable indicator of the quality of knowledge (Poston & Speier, 2005).

As a result, this study discusses the user evaluation mechanism referring to user feedback that includes, for example, rating, voting, and ranking, but not written comments. A growing number of professional online communities provide features that allow users to give feedback in these forms. Some examples include technet.microsoft.com for ICT professionals, www.warriorforum.com for Internet marketing professionals, and forums.nurse.com for nurses.

However, it should be noted that using rating, voting, ranking, and similar forms as a user evaluation mechanism is not without limitations. Some cast doubts on the validity of the rating (Maleewong et al., 2011). For example, user ratings may not be related to the quality of knowledge contributions because users tend to vote for what they support, or vote for contributions that share their views (Alfaro et al., 2011). In addition, user ratings are inherently subjective and voluntarily provided, resulting in a possible mismatch between the true quality of the knowledge contributions and the given rating (Poston & Speier, 2005). For example, knowledge workers may rate the quality of some knowledge contributions as low because they may not use what appear to be high-quality contributions in an appropriate context. Moreover, those who submit ratings may manipulate ratings in an attempt to influence others to use the contributions they have

made, with the hope of enhancing their reputation and standing within the community (Poston & Speier, 2005).

Nevertheless, the limitations of the user involvement mechanism should not be viewed as signs of discouragement. For example, although Otterbacher and Hemphill (2012) warn developers and users of the potential biases of user voting, they advocate for an appropriate aggregation of user voting. One possible solution to improve the validity of user ratings is to use sophisticated algorithms to process them (Maleewong et al., 2011). Several researchers have been making efforts in this regard (Lee et al., 2009; Maleewong et al., 2011). However, this is beyond the scope of this study. Table 2.1 summarises some advantages, disadvantages, and suggested ways for improvement of the user evaluation mechanism particularly in the forms of rating, voting, ranking, and other similar forms.

Table 2.1. Advantages and Disadvantages of the User Evaluation Mechanism

	Description	Source
Advantages	• User ratings influence managers' deletion decision	Sarkar et al. (2012)
	• Intuitive criteria	Poston and Speier (2005) Walther and Jang (2012) Sutanto and Jiang (2013)
	• User feedback affects new users' participation in an online community	Lampe and Johnston (2005)
	• Non-textual features (e.g., voting, rating, ranking) can help improve search quality	Jeon et al. (2006)
	• Volume and valence of user ratings positively affect individuals' willingness to express their opinion.	Hong and Park (2011)
Disadvantages	• Bias of user voting on online content	Otterbacher and Hemphill (2012)
	• Vote spam	Maleewong et al. (2011) Chen, Guo, et al. (2011)
Suggested ways of improvement	• Need a large amount of user participation	Maleewong et al. (2011)
	• Improve aggregation algorithms	
	• Educate users about appropriate use of user ratings	Otterbacher and Hemphill (2012)
	• Identify and deal with potential bias in the presentation of user ratings	
	• Use a weighted voting algorithm to aggregate votes	Lee et al. (2009)

In summary, despite some drawbacks, rating, voting, ranking, and similar forms are viewed as a practical and effective user evaluation mechanism. In this sense, motivating users to actively participate in the evaluation is vital for the successful implementation of the user involvement mechanism. Hence, it is pertinent to develop a good understanding of how users are motivated to take part in the evaluation. To do so, the next two sections review motivation theories to develop a better understanding of user participation in professional online communities.

2.4 Self-Determination Theory

Self-determination theory (SDT) (Ryan & Deci, 2002) is an overarching motivation theory that aims to systematically explain the dynamics of an individual's motivation and his/her behaviour within certain social contexts. It has been successfully applied to a variety of settings, including physical education, sports, health, and general education, and is increasingly used in the IS field in an attempt to understand IS user motivation (Zhang, 2008).

SDT consists of five mini-theories which are developed, in complement with each other, to address different aspects of multifaceted human motivation (Deci & Ryan, 2012). The first mini-theory, cognitive evaluation theory (CET), specifically addresses how social contexts influence intrinsic motivation. Organismic integration theory (OIT), the second mini-theory, is concerned with the internalisation of various forms of extrinsic motivation in certain social contexts. The third mini-theory, causality orientations theory (COT), describes individual differences in people's tendencies to orient themselves to the social context and to behave in accord with various causality orientations. The fourth mini-theory, basic psychological needs theory (BNT) introduces the concept of evolved psychological needs and their relations to psychological health and well-being. The fifth mini-theory, goal contents theory (GCT), elaborates the distinction between intrinsic and extrinsic goals and their impact on human motivation and wellness.

Deci and Ryan (2012) and Vansteenkiste et al. (2010) have provided comprehensive introductions to the development of each mini-theory in terms of their origins, theoretical considerations, and empirical bases. Moreover, their work demonstrates the ways in which the mini-theories relate to and complement each other in order to theorise a multidimensional process of human motivation. Overall, SDT illustrates motivation in its

various types on a continuum of self-determination and its role in the motivational process. This is elaborated upon in detail in this section.

2.4.1 Various Types of Motivation

SDT highlights the importance of the degree to which individuals perceive their behaviour as self-determined (Deci & Ryan, 2008). The continuum of self-determined motivation can be interpreted at three levels, as shown in Figure 2.4.

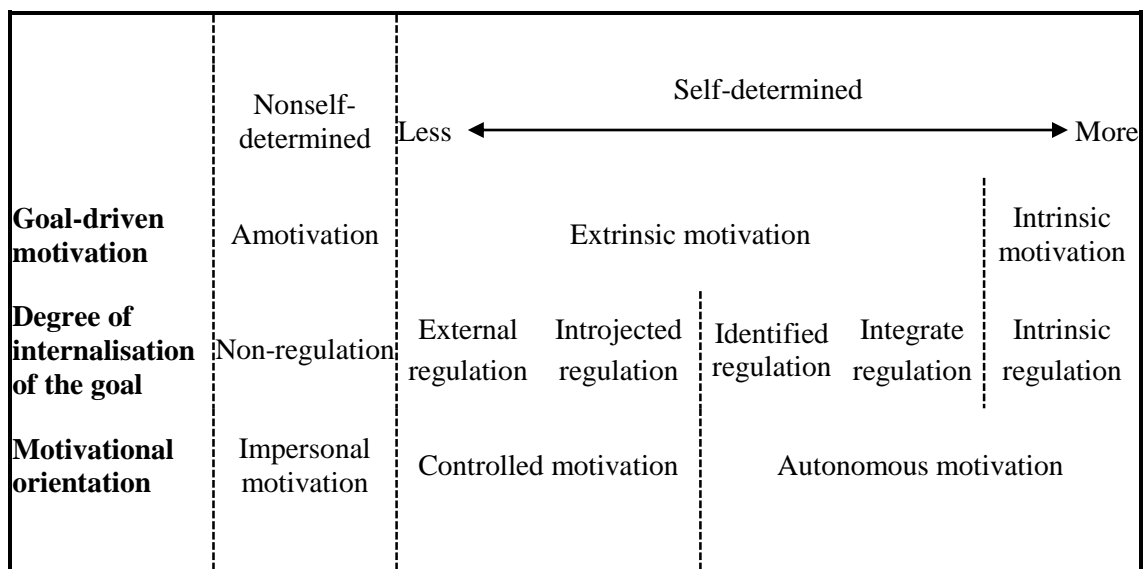


Figure 2.4. Various types of motivation within self-determination theory
(Adapted from Deci and Ryan [2008])

First, considering goals of a behaviour, self-determined motivation can be differentiated as amotivation, extrinsic motivation, and intrinsic motivation (Ryan & Deci, 2000a). Amotivation represents the state of lacking intention to act and is nonself-determined. Extrinsic motivation refers to doing something because of separable outcomes derived from the activity. In contrast, intrinsic motivation refers to doing an activity for the inherent pleasure, satisfaction, and interest of the activity itself. Within the continuum, amotivation represents the least self-determined type of motivation while intrinsic motivation signifies the most self-determined type of motivation. Nevertheless, when the interest and enjoyment in engaging in an activity are absent, people engage in

extrinsically motivated behaviour by rationalising the behavioural outcomes and then internalising the value and regulations of the behaviour (Vansteenkiste et al., 2010).

Second, according to the degree of internalisation of the goals of a behaviour, intrinsic regulation relating to intrinsic motivation is internally generated (Deci & Ryan, 2000). In contrast, four subtypes of extrinsic motivation can be distinguished: (1) external regulation, (2) introjected regulation, (3) identified regulation, and (4) integrated regulation (Deci & Ryan, 2000). External motivation involves the least degree of internalisation, where people are motivated to satisfy external demands, such as obtaining a reward or avoiding punishment (Vansteenkiste et al., 2010). Next, introjected motivation occurs when people act to gain pride and self-esteem, or to avoid feelings of guilt and shame, where the value of the behaviour is not fully accepted as one's own (Vansteenkiste et al., 2010). Identified motivation reflects that people understand the significance of behaviour and, as a result, accept it as being personally important and behave accordingly (Deci & Ryan, 2000). Finally, integrated regulation, the most autonomous form of extrinsic motivation, refers to regulations adopted into one's values and needs but contingent upon reward.

Finally, to study individual differences in the source of their behavioural initiation, self-determined motivation can be also classified into impersonal, autonomous, and controlled. This classification is based on one's motivational orientations. Within SDT, motivational orientations refer to individual differences at the personality level in terms of "the initiation and regulation of behaviour, i.e. individual selection and interpretation of stimuli in accordance with needs and personal orientations" (Beckmann, 2009, p. 244). According to Deci and Ryan (1985), three types of motivational orientations are autonomy orientation, control orientation, and impersonal orientation. While autonomy orientation means that the causality of behaviour comes from inside the self, control orientation represents causality from outside the self. Finally, impersonal orientation explains the absence of causality of behaviour.

Motivational orientations are related to various types of behavioural regulations. According to Ryan and Deci (2002), autonomous motivation is observed when behaviour is initiated with the experiences of volition, psychological freedom, or reflective self-endorsement. In contrast, controlled motivation is observed when behaviour is initiated because of pressure that possibly comes from internal or external sources. In this respect, within SDT, autonomous motivation can be viewed as a combination of intrinsic and

identified extrinsic motivations (Ryan & Deci, 2002). In contrast, controlled motivation is associated with introjected and external extrinsic motivations (Ryan & Deci, 2002).

2.4.2 A Motivational Process

In addition to explaining the multidimensional nature of motivation, SDT focuses on the quality of motivation in a particular context and the social factors that influence motivation in that context to explain how one can be motivated to act (Deci & Ryan, 2000).

According to SDT, motivation acts as a key determinant of behavioural outcomes (Deci & Ryan, 2000). It is important to recognise that all types of motivation can be reflective of one's intention to act, though they may result in different quality outcomes (Deci & Ryan, 2008). This is because individual users' motivation may differ in the extent to which they are self-determined – that is, “in the extent to which they are enacted with a full sense of volition and choice” (Deci & Ryan, 2000, p. 237). In a basic and broad sense, the goal-driven types of motivation and various degrees of internalisation of motivation have different effects on behavioural outcomes (Vallerand, 2000). These types of motivation include intrinsic motivation, extrinsic motivation and its subtypes, and amotivation.

Within SDT, the effective functioning of the internalisation process of different types of motivation can be fostered by the environment (Deci & Ryan, 2000). An individual is a self-concept in a social context in which one's behaviour occurs (Abrams & Hogg, 2001). In this sense, social factors can influence one's motivation to act, the effect of which can be mediated by satisfaction with how well one's psychological needs for autonomy, competence, and relatedness are fulfilled within that social context (Vallerand, 2000).

According to SDT, the need for autonomy is related to the desire to be an independent, self-organised individual with a locus of control over one's actions whereby one can freely pursue activities and feels volitional in doing so (Deci & Ryan, 2000). The need for competence implies that individuals tend to be effective in their interactions with the environment and when they perform an activity (Deci & Ryan, 2000). The need for relatedness refers to the need for feeling connected to and supported by others within a community (Deci & Ryan, 2000).

In particular, individuals are willing to act when they believe their behaviours are beneficial and important to the collective (Beenen et al., 2004; Hars & Ou, 2002; Hsu & Lin, 2008). In this case, individuals tend to internalise the values and regulations of their social groups when they feel autonomous in acting, competent in understanding the values and regulations and acting accordingly, and related to others in the group or to the group at large (Deci & Ryan, 2000). In other words, the contextual support for individuals' basic needs for autonomy, competence, and relatedness represents certain energetic resources that promote various types of motivation (Vansteenkiste et al., 2010).

This motivational sequence posits the motivational process underlying motivated behaviour (see Figure 2.5). Within the motivational process, various types of motivation differ in how they influence behavioural outcomes (Vallerand, 2000). In turn, different types of motivation in a particular context can be affected by social factors through the mediation of one's perceptions of psychological need fulfilment (Vallerand, 2000).

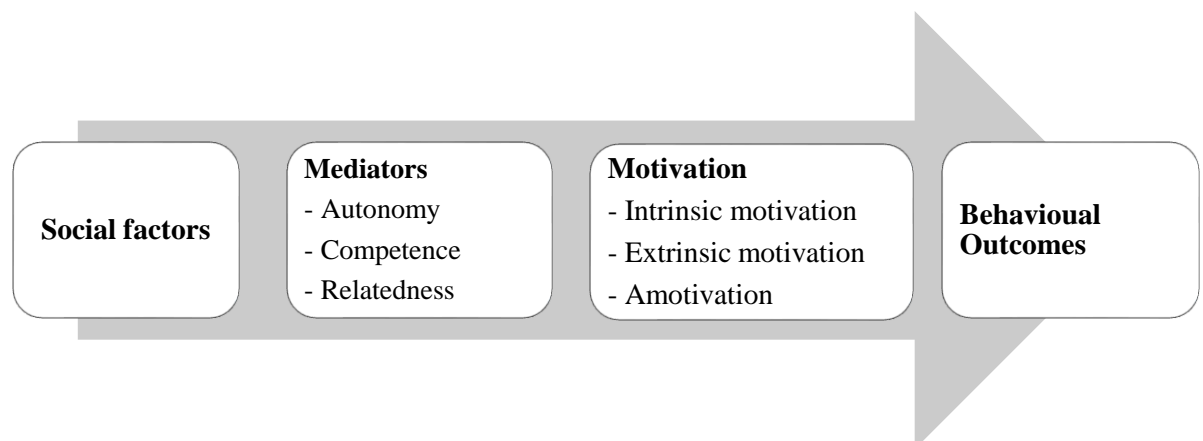


Figure 2.5. The motivation process
(Adapted from Vallerand [2000])

2.4.3 Motivational Orientation

According to Ryan and Deci (2002), the distinction between autonomous motivation and controlled motivation is important in understanding one's behaviour from the perspective of individuals' motivational orientations. The individual differences in behavioural orientation complement the various internalisation styles of extrinsic motivation by examining the individual tendencies towards the autonomous and controlled causalities of individual behaviour (Deci & Ryan, 2000). Although motivational orientations are associated with various types of extrinsic motivation, that association is not simply a

grouping of different types of intrinsic and extrinsic motivations. Rather, the distinction between autonomous motivation and controlled motivation is vital to the study of the role of individuals' differences in understanding their behavioural initiation, which goes beyond behavioural regulation (Vansteenkiste et al., 2010). Therefore, employing different types of motivation that reflect one's motivational orientation (i.e., autonomous motivation and controlled motivation) is also helpful in understanding the role of motivation in the motivational process from two aspects.

First, motivational orientations stress the importance of understanding the motivational process from the inner self of an individual. Although SDT historically focuses on the effect of social factors on human motivation through the internalisation of goals and subsequent outcomes of a behaviour, Deci and Ryan (1985) demonstrate that individual differences in one's causality orientations also have an impact on the internalisation process. In another study, Deci and Ryan (1987) point out that the impact of a social factor on one's motivational process is determined more by the psychological meaning of the factors for the individual than by a behaviour's objective characteristics relating to the factor. This is partly because individuals differ in their responses to social-contextual motivation incentives and encounters (Beckmann, 2009). Hence, it is suitable to explain an individual's motivational process towards acting by examining the role of motivation from the perspective of one's motivational orientation.

Second, motivational orientations are useful for understanding the role of social contexts played in one's motivation process. According to Deci and Ryan (1985), a motivational orientation serves as a global pattern of people's response to their selves and the environment. This is because causality orientations represent individual differences that are subject to the influence of one's experiences in a particular social context (Vansteenkiste et al., 2010). Subsequently, when examining one's motivation, it is suggested to take into account not only the social context, but also the way in which people differ in their interpretations of and reaction to the social context (Deci & Ryan, 1985).

2.5 User Motivation in Professional Online Communities

With the increasing application of professional online communities, a number of studies have examined user behaviour in these communities. Some key research topics include

the adoption of knowledge management systems, knowledge creation, and knowledge transfer (e.g., Ardichvili, 2008; Kankanhalli et al., 2005; Paroutis & Al Saleh, 2009; Vuori & Okkonen, 2012; Wasko & Faraj, 2005). In these studies, several aspects of the causal sequence of the motivational process have been investigated; for example, the consequences of motivation and its associations with social factors.

The Consequences of Motivation

To improve the understanding of the role of motivation in the motivational process, some studies have examined the effect of different types of motivation on behavioural outcomes. For example, Roberts et al. (2006) adopt intrinsic motivation and extrinsic motivation to investigate users' willingness to participate in open source software projects. Likewise, Malhotra et al. (2008) examine the effects of internal motivation, introjected motivation, and external motivation on system adoption and suggest that looking into different types of extrinsic motivation provides additional details to investigate users' behavioural intention. Contributing to Malhotra et al.'s study, Ke and Zhang (2010) investigate the effect of four subtypes of extrinsic motivation (i.e. integrated, identified, introjected, and external) on the effect users made to accomplish a task in an open source software project. Some studies have also employed autonomous motivation to predict professional people's behaviours, such as knowledge sharing (Gagné, 2009; Oyefolahan & Dominic, 2013; Oyefolahan et al., 2012).

Although examining the effect of motivation on behavioural outcomes helps explain how users might be motivated towards acting, most studies have overlooked the antecedent of motivation in the motivational process. There are a few exceptions, which include studies conducted by Li et al. (2012), Gagné (2009), Oyefolahan and Dominic (2013), and Oyefolahan et al. (2012). In Li et al.'s study, the antecedents of motivation are leadership characteristics in the context of open source software development. Gagné's antecedents of motivation are system characteristics, when investigating knowledge sharing within organisations. In the two studies by Oyefolahan, technical factors are considered as antecedents of motivation. However, none of the abovementioned studies examines the effect of social factors on motivation.

The Relationships between Social Factors and Motivation

Prior studies have discussed the relationships between social factors and motivation at the conceptual level. For example, Lin (2007) regards knowledge self-efficacy and enjoyment in helping others as intrinsic motivation and reciprocal benefits as extrinsic motivation. Likewise, Hung et al. (2011) consider altruism to be intrinsic motivation, while economic reward, reputation feedback, and reciprocity are part of extrinsic motivation. Similarly, Jeon et al. (2011) consider enjoyment in helping others and in influencing the community as intrinsic motivation, while image and reciprocity are extrinsic motivation. Some researchers have also discussed the relationships between social factors and different types of extrinsic motivation. Lou et al. (2013), for example, classify enjoyment in helping into intrinsic motivation, self-worth and learning into internalised extrinsic motivation, and rewards in the reputation system as external motivation. Because the discussion on the relationships of social factors and motivation is mainly dependent on the intuitive and conceptual meanings of social factors and different types of motivation, some social factors have been conceptually associated with different types of motivation. For example, reputation is considered to be linked with intrinsic motivation in some studies (e.g., Wasko & Faraj, 2005), and with extrinsic motivation in other studies (e.g., Hung et al., 2011; Lin, 2007; Vuori & Okkonen, 2012).

Discussions on the theoretical relationships between social factors and motivation provide a start for understanding the role of social factors as antecedents of motivation. Empirical examination of the direct effect of social factors on motivation is necessary to deepen the understanding of their relationship.

The Relationships between Social Factors and Behavioural Outcomes

Extant literature has intensively investigated the direct effect of social factors on user behaviour in professional online communities. These studies suggest that social factors play an important role in explaining user participation in activities involving the knowledge repository in these communities.

A number of studies have focused on social factors to explain the quantity of user contributions. For example, Tsai et al. (2012), Hew and Hara (2007), and Lin (2007) find that reciprocal relationship expectancy is associated with knowledge sharing intention. Likewise, Vuori and Okkonen (2012) find that professionals share knowledge in an intra-

organisational professional online community because of the desire to help the organisation reach its goals and to help colleagues with reciprocal expectation. In addition, they find that self-centred rewarding such as promotion opportunities, financial rewards, advancing one's career, or showing off to others are seen as least motivating. Similar to Vuori and Okkonen's (2012) results, Lin (2007) also find that expected organisational rewards have no significant effect on knowledge sharing intention.

Several studies have also investigated how social factors affect the quality of user contributions. Results from these studies reveal that the effects of a particular social factor on the quality of user contributions may differ from its effect on the volume of user contributions. For example, Chiu et al. (2006) found that social interaction ties, reciprocity, and identification have no impact on the quality of user contributions. However, trust and shared language and vision are found to be influential on the quality of contributions. Lou et al. (2013) found that rewards in the reputation system, learning, knowledge self-efficacy, and enjoying helping are important social factors for contributing to both the volume and the quality of the knowledge repository. Enjoying helping and rewards in the reputation system are more effective in facilitating the volume rather than the quality of knowledge contributions, while knowledge self-efficacy is more strongly related to making quality contributions. In a longitudinal research, Wasko and Faraj (2005) investigate the role of social factors in explaining both the volume and the quality of users' knowledge sharing. Their results indicate that perceptions of enhanced reputation and one's network centrality are linked to both behaviours; whereas, enjoying helping and self-rated expertise are not linked to either the volume or the quality of contributions. Moreover, reciprocity expectation and tenure in the field are associated with the volume of contributions, but not the quality of contributions. In contrast, affective commitment is negatively related to the quality, but not related to the volume of knowledge contributions.

Overall, it appears that social factors relating to users' concern about the community has a bigger impact on the quantity of contributions than on the quality of contributions. For example, Peddibhotla and Subramani (2007) suggest that motivation relating to benefits to contributors is negatively associated with the quality of contributions, but is positively associated with the quantity of contributions. However, social factors relating to benefiting other users but not the contributors are positively associated with the quality of contributions, yet negatively associated with the quantity of contributions. Likewise, Chiu et al. (2006) and Beenen et al. (2004) reveal in their study that community-related

outcome expectations which refer to users' belief that their contributions are beneficial to a community have a significant impact on the quality of their contributions. In contrast, personal outcome expectations are not associated with knowledge quality. This is particularly applicable in situations where user participation is important to the community (Fang & Neufeld, 2009).

Nevertheless, the reviewed studies do not offer a comprehensive framework to understand the underlying motivational process to explain user participation in professional online communities. None of these studies examines the role of motivation in the motivational process. Hence, these studies are inadequate to explain the underlying motivational process from the psychological perspective of an individual (Malhotra et al., 2008). In addition, although several social factors that can affect user behaviour in professional online communities have been identified by prior research, they have not been investigated in the context of user participation in the evaluation of the quality of knowledge contributions. Therefore, the following section discusses social factors that are appropriate for studying user engagement in the evaluation activity in particular.

2.6 Social Factors Relating to the User Evaluation Mechanism

Users' motivation towards participating in the evaluation of the quality of knowledge contributions in professional online communities can be affected by the social environment of the community (Deci & Ryan, 2000). Social factors can represent the ways in which the social environment of a professional online community forms the sources of user motivation. Given that user engagement in the evaluation activity is on a voluntary and cooperative basis, two important sources of user motivation are the social exchange and community commitment relationships between users and a professional online community.

2.6.1 User Evaluation as a Social Exchange

Research shows that user feedback can be regarded as a social exchange behaviour whereby users provide their opinion in exchange for obtaining some valuable information from the community (Tong et al., 2007). According to social exchange theory (SET) (Blau, 1964, p. 91), social exchange activities are "voluntary actions of individuals that

are motivated by the returns they are expected to bring”. During the evaluation of knowledge contribution quality, users need to utilise their knowledge and time with an expectation of obtaining some valuable information from the community. Meanwhile, user participation in the evaluation of the quality of knowledge contributions involves voluntary contribution and collaboration.

Prior studies suggest that SET is useful for investigating user participation in professional online communities (Hars & Ou, 2002; Tsai et al., 2012; Wasko & Faraj, 2005). SET is also considered suitable for understanding the social factors that can motivate users to evaluate the quality of knowledge contributions in exchange for satisfying future needs of useful knowledge contributions. Social factors considered to be applicable to this study include reciprocity, online reputation, and trust.

Reciprocity specifies that individuals should help those who have helped them by returning the favour. For example, during knowledge exchange, a strong belief in reciprocity can encourage people to mutually and fairly share knowledge in professional online communities (Lin et al., 2009). Likewise, Peddibhotla and Subramani (2007) show that reciprocity is positively associated with the quality of contributions in the form of feedback. A user can benefit from a professional online community where knowledge is safeguarded by other users. For instance, users may be willing to share knowledge because they have received help from others in the past or because of their expectation of getting help from others in future (Hew & Hara, 2007). However, the inability of the community to reciprocate by providing users with rich knowledge is one of the barriers that hinders knowledge sharing in a professional online community (Vuori & Okkonen, 2012). As a result, users may want to take part in evaluating knowledge contribution quality with the expectation that others will do the same to save their time and effort in the search for quality content. Users also intend to benefit the community by giving feedback to indicate the quality of knowledge contributions.

Reputation is another important social exchange belief related to user motivation to engage in the evaluation of the quality of knowledge contributions in professional online communities. A user’s reputation in a professional online community can extend to his or her profession (Wasko & Faraj, 2005); thus, gaining online reputation can be helpful to professionals seeking to advance their careers (Oreg & Nov, 2008). Evidence from prior research suggests that building reputation is a strong motivator for users to offer useful advice to others in professional online communities (Wasko & Faraj, 2005). Thus,

a user may be motivated by the gain in online reputation from getting involved in evaluating the quality of knowledge contributions in professional online communities.

Trust is another key SET concept that can help explain users' motivation to evaluate knowledge contribution quality in professional online communities. Trust in online settings may emerge from different sources such as interpersonal trust and system trust (Hsu et al., 2011). Different sources of trust are important, yet different, in facilitating cooperation and collaboration among users (Hsu et al., 2011). For example, users' perceived trust in others and in the community differ (Fang & Chiu, 2010). Trust in peers can be regarded as the belief in other users' abilities, integrity, and benevolence in evaluating knowledge contribution quality in professional online communities. Trust in the user evaluation mechanism refers to users' belief that having users involved in the evaluation of the quality of knowledge contributions is a trustworthy means of managing the knowledge repository in professional online communities.

The role that trust plays in social exchange activities has been investigated in prior studies with results that show that trust is aligned with knowledge generation, sharing, and exchange (Fang & Chiu, 2010). For example, Tseng and Kuo (2010) find that trust motivates users to share knowledge in an online community for professional learning, while Chiu et al. (2006) find that trust has a positive effect on the motivation to share reliable knowledge in an online community for IT professionals. In addition, according to Blau (1964), trust is critical to building effective social exchange relationships among users and between a community and its users, which is likely to lead users to willingly engage in community activities that are beneficial to others and the community at large (Fang & Chiu, 2010). This is because individuals are more willing to engage in community activities in a trusting environment, especially when involving cooperative interactions such as giving feedback on user contributed online content (Chiu et al., 2006).

2.6.2 User Evaluation as Community Commitment

In addition to the social exchange relationships involved in the evaluation of the quality of knowledge contributions in a professional online community, the psychological bonds that users develop in the community are also important to understand their engagement in the evaluation activity. Commitment theory (CT) (Meyer & Allen, 1991) is a meaningful theory that provides locally situated explanations for why individuals engage

in certain behaviours based on the psychological bonds they develop in the community (Meyer & Allen, 1997). According to Meyer et al. (2004), investigating the role of community commitment as antecedents of motivation helps broaden the understanding of the motivational process underlying behaviour. Particularly, including community commitment in the motivation process serves as the stimulus for the introduction of motivational orientations as a way of acknowledging individual differences in explaining behaviour (Meyer et al., 2004). It is also a useful theory that can partially explain voluntary social exchange behaviours in professional online communities (Bateman et al., 2011). This is because commitment research is originally proposed to explain voluntary behaviours in non-profit organisations (Bateman et al., 2011).

Prior research has acknowledged commitment as one among a set of energising forces that contribute to motivation (Meyer et al., 2004). Though commonly applied to the organizational context (Tsai & Cheng, 2012), CT has been increasingly investigated in the context of professional online communities where commitment is found to be one of the key motivational factors for explaining user participation in these types of communities. For example, Cheung and Lee (2009) employ CT to study the intention of teachers and educators to continue using professional online communities and to recommend the community to others. In addition, Bateman et al. (2006) adopt CT to explain three types of user behaviour (i.e., reading, posting, and moderating) in professional online communities.

Meyer and Allen (1991) propose that commitment consists of three components: affective, normative, and continuance commitments. In an online setting, affective community commitment can be referred to as “a bond between a member and a particular community that is based on the member’s strong emotional attachment to that community” (Bateman et al., 2011, p. 843) while normative community commitment is “a bond between a member and a particular community that is based on the member’s sense of obligation towards that community” (Bateman et al., 2011, p. 844). Continuance community commitment means “a bond between a member and a particular community that is based on the member’s belief that his or her involvement provides net benefits that are not easily available elsewhere” (Bateman et al., 2011, p. 843).

CT is considered appropriate for explaining user participation in the evaluation of the quality of knowledge contributions, which is usually a voluntary behaviour in professional online communities. Users who are committed to a community are likely to

voluntarily engage in activities that help achieve the community goal of managing the knowledge quality (Kim, 2006). Studies have found different types of community commitment to be social factors in explaining user participation in professional online communities (Bateman et al., 2006).

Nevertheless, this study argues that affective and normative community commitments are important social factors in understanding user evaluation activity. Affective commitment and normative commitment are more relevant to this study because they help explain collaborative and voluntary behaviours (Meyer et al., 2004). This can be evidenced by Bateman et al.'s (2011) study which finds that both affective and normative community commitments affect different voluntary behaviours (i.e., posting replies and moderating discussions) in online communities. In contrast, they also find that continuance community commitment affects only reading behaviour. Bateman et al.'s findings imply that users with high levels of affective community commitment and normative community commitment are likely to care about the communities' sustainability, while users with continuance community commitment do not demonstrate such a care. In addition, the benefits users can gain from one professional online community can also be obtained from another community. As a result, users can easily move from one professional online community to another without involving a switching cost. In this circumstance, continuance community commitment, which is important when the benefits one obtains from one community is not easily available in other communities, may not apply well to user behaviour in professional online communities, including user engagement in the user evaluation activity.

2.7 Summary of Chapter Two

This chapter started by introducing the background of this study, which involves the importance of the quality of knowledge in professional online communities. This was followed by discussions on the benefits and feasibility of getting users involved in evaluating the quality of knowledge contributions. Next, self-determination theory was introduced to discuss various types of motivation and a motivational process in which motivational orientations play an important role.

Literature on users' motivation to participate in professional online communities was reviewed with an emphasis on the consequences of motivation and the relationships

between social factors and motivation. It was noted that the motivational process has not been fully examined because of a lack of empirical examination of the role of social factors as antecedents of motivation. Social factors that are likely to influence user motivation to become engaged in assessing the quality of knowledge contributions in professional online communities are derived from SET and CT. These social factors include reciprocity, reputation, trust in peers, trust in the user evaluation mechanism, and affective and normative community commitment.

The next chapter presents the development of a theoretical framework to provide a motivational process underlying user intention to evaluate the quality of knowledge contributions in professional online communities.

CHAPTER Three: Theoretical Framework and Hypotheses

3.1 Chapter Overview

This chapter presents the development of a theoretical framework and hypotheses related to the underlying motivational process of users' evaluation of the quality of knowledge contributions in professional online communities. The first section presents a motivational process on the basis on self-determination theory (SDT), social exchange theory (SET), and commitment theory (CT). This is followed by a discussion on hypothesised relationships associated with the proposed motivational process. The lower part of Figure 2.1, which is presented at the beginning of Chapter Two, shows an overview of this chapter.

3.2 A Motivational Process for this Study

SDT is important to establish the argument around motivation to engage in a behaviour. Based on SDT, this study proposes a motivational process to explain user participation in the evaluation of the quality of knowledge contributions in professional online communities. The proposed motivational process follows causal logic: social factors influence motivation that, in turn, leads to behavioural intention.

In the proposed motivational process, motivation consists of autonomous motivation and controlled motivation. A review of existing studies that have investigated the motivation contract reveals that it is appropriate to investigate different motivational orientations when considering the social factors as antecedents of motivation, for example Gagné (2009), Oyefolahan and Dominic (2013), and Oyefolahan et al. (2012). Motivational orientations are viable concepts to understand user motivation in the IS field. Sheldon et al. (2003) state that relatively less research has employed motivational orientation over other concepts in SDT, e.g., intrinsic versus extrinsic motivations and different regulatory styles of behaviour. Nevertheless, it is arguable that the concept of motivational orientation could be meaningful for investigating IS-related user behaviour, for example group collaboration mediated by information and communication technologies (Wang et

al., 2014) and people's adaption to using information technology to engage in an activity (Sharafi et al., 2006). In addition, prior research has shown that investigating individual motivational orientations may generate useful practical implications in designing a human-computer interface. This is because differences in individuals' motivational orientations result in different ways of collaboration in an environment mediated by human-computer interaction (Wang, X. et al., 2012). Thus, the intrinsic and extrinsic motivation in the original motivational process is replaced with autonomous motivation and controlled motivation.

The mediating effect of need satisfaction is not considered in the proposed motivational process. A review of the literature on the relationships between social factors and motivation and those between social factors and behaviour provides insights into the reasons why users take part in activities in professional online communities. However, the role of motivation has not been taken into account in understanding the underlying motivational process. This suggests a need to empirically test the direct effect of social factors on motivation within a motivational process. Hence, user satisfaction with the need for autonomy, competence, and relatedness is excluded in the motivational process.

To understand the antecedents of motivation, SET and CT are employed to derive social factors that may affect user motivation to evaluate the quality of knowledge contributions. The social factors considered relevant include reciprocity, online reputation, trust in peers, trust in the user evaluation mechanism, and affective and normative community commitment. The motivational process, as depicted in Figure 3.1, leads to the development of a theoretical framework to guide the undertaken study, which is illustrated in detail in the following section.

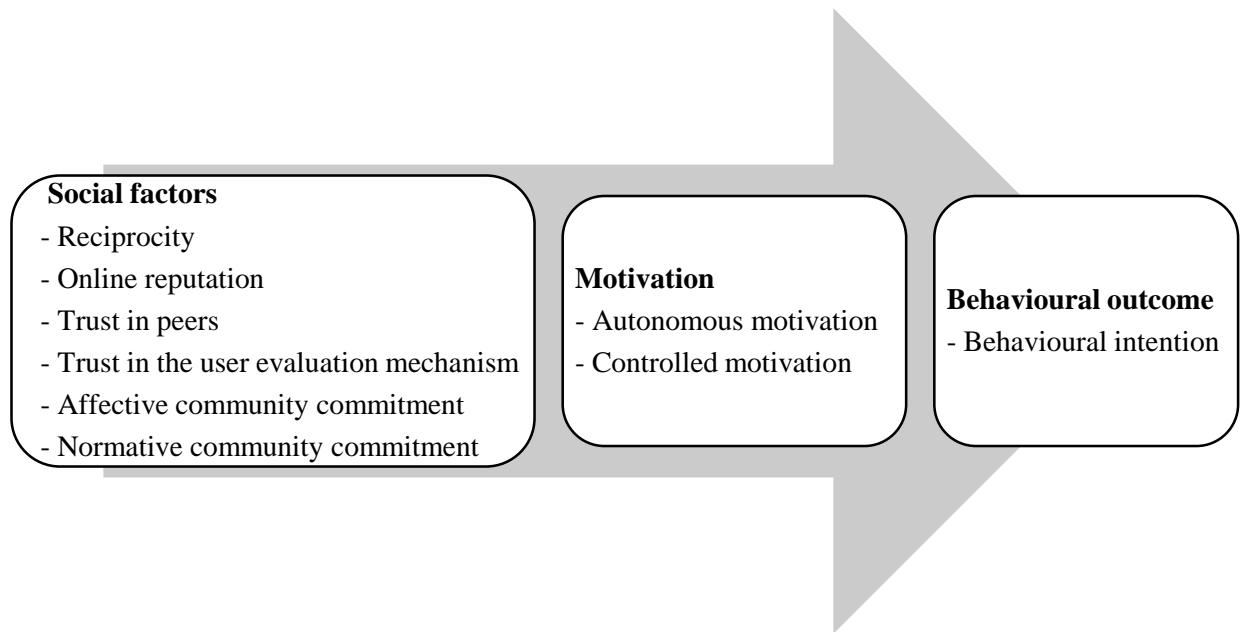


Figure 3.1. A motivational process proposed for this study

3.3 The Development of Hypotheses and the Research Model

Based on the motivational process shown in Figure 3.1, this section discusses the hypothesised relationships involved in the motivational process underlying users' intention to evaluate the quality of knowledge contributions in professional online communities.

3.3.1 Motivation and Behavioural Intention

According to Ryan and Deci (2000b), people's self-determined motivation, which involves autonomous motivation and controlled motivation, is likely to promote their behavioural intention. Extant research has shown that autonomous motivation and controlled motivation are associated with positive behavioural outcomes. For example, Li et al. (2012) show that identified motivation, which is one aspect of autonomous motivation, and external motivation, which is a component of controlled motivation, are positively related to user contributions in open source projects. Their results support SDT's argument that both autonomous motivation and controlled motivation reflect people's high involvement in an activity (Vansteenkiste et al., 2006), although their influence may vary in quality at the individual personality-level (Reeve, 2012).

Engaging users in the evaluation of knowledge contribution quality is a means of maintaining a healthy professional online community where users can gain several benefits in addition to knowledge acquisition. Community participation by evaluating the quality of knowledge contributions is a voluntary activity, suggesting that users are likely to perform this activity with their own free will without pressure from others. A sense of personal choice makes users feel that their actions represent their true self, which fosters their intention to act (Deci & Ryan, 2000). In addition, evaluating knowledge contribution quality provides users with opportunities to show their ability to carry out this activity. When users choose to do the evaluation, they have the chance to apply their knowledge to help maintain the online community (Kayhan et al., 2013). When individuals perceive that they are capable of carrying out an activity, they are motivated to involve themselves in the activity (Montero, 2004). Furthermore, having users involved in the evaluation process of knowledge contributions avoids creating tensions between those who are given privileges to evaluate knowledge contributions and those who are not (Johnston, 2010), thus encouraging a friendly atmosphere within the online communities.

Consequently, users with autonomous motivation and controlled motivation are likely to be willing to help maintain a healthy community by engaging in the evaluation activity. Based on the theoretical arguments of SDT and related empirical evidence, the following hypotheses are proposed:

Hypothesis 1: Autonomous motivation is positively related to user intention to evaluate the quality of knowledge contributions in professional online communities.

Hypothesis 2: Controlled motivation is positively related to user intention to evaluate the quality of knowledge contributions in professional online communities.

3.3.2 Social Factors and Motivation

This study derives social factors based on SET and CT to understand users' intention to take part in the evaluation of knowledge contribution quality. Social factors include reciprocity, online reputation, trust, and community commitment, which are explained in detail below.

Reciprocity

According to SET (Blau, 1964), users expect mutual reciprocity to offset the effort and time they invest in contributing to professional online communities. For example, reciprocity is found to be one of the factors that facilitates voluntary knowledge sharing in professional online communities (Wasko & Faraj, 2005). Moreover, reciprocity is found to be positively related to motivation (Gagné, 2009). Therefore, strong belief in reciprocity can be a stimulus of users' autonomous motivation and controlled motivation to help each other and the community by evaluating the quality of knowledge contributions in professional online communities. This leads to the following hypotheses:

Hypothesis 3: Reciprocity is positively related to users' autonomous motivation to get involved in evaluating the quality of knowledge contributions in professional online communities.

Hypothesis 4: Reciprocity is positively related to users' controlled motivation to get involved in evaluating the quality of knowledge contributions in professional online communities.

Online Reputation

According to SET (Blau, 1964), individuals engage in social interaction based on an expectation that they will benefit from their engagement in some way such as through reputation, image, and reciprocity. Users expect to earn reputation for their good conduct and receive sanction otherwise. Gaining and retaining good reputation has a positive effect on users' participation intention (Zheng & Jin, 2009). However, negative reputation as a sanction of inappropriate behaviour has a negative impact on users' intention for further participation (Jøsang et al., 2007).

Evidence from prior research indicates that earning respect and recognition from others is one of the key motivations for knowledge sharing (Jin et al., 2013). For example, findings from prior studies on user participation in both intra-organisational and cross-organisational professional online communities are consistent with SET and provide evidence that gaining professional reputation is a strong motivator for active participation (Wasko & Faraj, 2005). Moreover, prior studies have also found that individuals' reputation in online settings extends to their professions (Wasko & Faraj, 2005). In online

contexts where users are professionals in certain fields, users are likely to exhibit expertise in their fields to gain reputation, which in turn may benefit their careers (Oreg & Nov, 2008). Thus, users' perception that getting involved in evaluating the quality of knowledge contributions will enhance their reputation in professional online communities and off-line professional communities is likely to make users motivated to engage in the activity. This leads to the following hypotheses:

Hypothesis 5: Online reputation is positively related to users' autonomous motivation to get involved in evaluating the quality of knowledge contributions in professional online communities.

Hypothesis 6: Online reputation is positively related to users' controlled motivation to get involved in evaluating the quality of knowledge contributions in professional online communities.

Trust in Peers

Previous research suggests that people are more likely to engage in knowledge-related community activities in a trusting environment (Ridings et al., 2002). Trust among users boosts a user's expectation that other users will contribute to a community in a way that the community desires (Ridings et al., 2002). In particular, when trust exists between users, they tend to collaborate with each other to contribute to the community (Chiu et al., 2006). For example, in Kimmerle et al.'s (2007) study, users with a higher level of interpersonal trust in the community appear to be more collaborative in knowledge exchange than those with a lower level of trust in their peers. In addition, trust in peers is an effective means to ease the concerns of the free-riding dilemma and ambiguous and incomplete knowledge contributions in online communities (Fang & Chiu, 2010).

Similarly, the presence of trust among users is likely to improve the quality of user contribution (Fang & Chiu, 2010). This is evidenced by Chiu et al.'s (2006) results that show trust has a positive effect on knowledge sharing quality rather than quantity. Thus, trust in peers is likely to affect a user's motivation to become involved in the evaluation of the quality of knowledge contributions in professional online communities. This leads to the following hypotheses:

Hypothesis 7: Trust in peers is positively related to users' autonomous motivation to get involved in evaluating the quality of knowledge contributions in professional online communities.

Hypothesis 8: Trust in peers is positively related to users' controlled motivation to get involved in evaluating the quality of knowledge contributions in professional online communities.

Trust in the User Evaluation Mechanism

Drawing on SET, Fang and Chiu (2010) examine the relation between trust in a community management mechanism and user intention to continuously use professional online communities. They find that individuals who believe that the community management mechanisms consider and care about their desire to gain knowledge will reciprocate by participating in activities that the community desires them do. For example, Hong et al.'s (2011) study shows that users' perception of the effect of their ratings on others is positively related to their willingness to express opinions.

Hsiao et al. (2010) also find that trust in recommendations made by other users motivates users to purchase products. Moreover, Fang and Chiu (2010) argue that users who believe that the management systems (i.e., managers, moderators, or management teams) consider and care about their needs are more willing to voluntarily spend time and effort on community activities. Thus, trust in the user involvement mechanism is also likely to affect a user's motivation to become involved in the evaluation of the quality of knowledge contributions in professional online communities. This leads to the following hypotheses:

Hypothesis 9: Trust in the user involvement mechanism is positively related to users' autonomous motivation to get involved in evaluating the quality of knowledge contributions in professional online communities.

Hypothesis 10: Trust in the user involvement mechanism is positively related to users' controlled motivation to get involved in evaluating the quality of knowledge contributions in professional online communities.

Affective Community Commitment

Community commitment is positively related to individuals' willingness to invest extra time and effort in knowledge sharing and exchange (Meyer & Allen, 1997). To be specific, both affective community commitment and normative community commitment are related to behaviour, although the former is often found to be more important and durable than the latter in increasing the users' motivation towards behaviours (Jin, B. et al., 2010). For example, both affective community commitment and normative community commitment are related to users' continuance intention (Jin, X. et al., 2010) and can predict user participation in moderating discussions (Bateman et al., 2011).

Extant research has found that users are motivated to engage in community activities when they feel connected with the community (Roca & Gagné, 2008). For example, Cheung and Lee (2009) find that affective commitment positively affects users' intention to continue using and to recommend a professional online community to others. In addition, when users have strong affective community commitment, they tend to care about the communities' sustainability. As a result, they are willing to spend time and make an effort to help maintain a healthy community, for example by means of replying to others' questions (Bateman et al., 2011). Another example is that users tend to make quality contributions when their perception levels of relational capital increases (Lu & Yang, 2011). In addition, users tend to willingly help a community if they perceive that others share the same community goals (Cho et al., 2010), thus enhancing their identification with the community (Deci & Ryan, 2000).

Therefore, users with a stronger affective commitment to a professional online community are likely to feel motivated to experience the community's goals and values. This leads to the following hypotheses:

Hypothesis 11: Affective community commitment is positively related to users' autonomous motivation to get involved in evaluating the quality of knowledge contributions in professional online communities.

Hypothesis 12: Affective community commitment is positively related to users' controlled motivation to get involved in evaluating the quality of knowledge contributions in professional online communities.

Normative Community Commitment

When the sense of duty to help others in the community increases, users tend to feel motivated to assist others in the collective due to a sense of responsibility (Wasko & Faraj, 2005). For example, users are willing to rate others' contributions if they perceive their ratings have an effect on others' choices about using these knowledge contributions (Hong & Park, 2011). Meanwhile, when users have a strong sense of obligation to the community, they are likely to be motivated to engage in activities that are beneficial to the community (Oreg & Nov, 2008). For example, normative community commitment is found to have a positive effect on users' moderating behaviour (Bateman et al., 2011). Likewise, users with a strong sense of normative commitment to the community are likely to experience a high level of motivation to get involved in the evaluation of the quality of knowledge contributions. This leads to the following hypotheses:

Hypothesis 13: Normative community commitment is positively related to users' autonomous motivation to get involved in evaluating the quality of knowledge contributions in professional online communities.

Hypothesis 14: Normative community commitment is positively related to users' controlled motivation to get involved in evaluating the quality of knowledge contributions in professional online communities.

3.3.3 The Moderating Role of Knowledge Self-efficacy

Knowledge self-efficacy is the sense of "confidence in one's ability to provide knowledge that is valuable" to others (Kankanhalli et al., 2005, p. 123). It relates to one's judgements about what one can do with the skills one has, rather than about the skills one possesses (Imhof et al., 2007). In other words, knowledge self-efficacy reflects one's level of confidence in the ability to conduct an activity (Lai & Hsieh, 2013).

According to Hayashi et al. (2004), users prefer doing activities that they feel they can successfully accomplish because one's self-efficacy levels can affect one's emotional responses to an activity. Individuals are motivated to increase their involvement when they perceive that they are capable of helping others and the community at large (Montero, 2004). For example, users who believe that they are confident using their expertise to help others are willing to participate in knowledge related activities in professional online

communities (Tseng & Kuo, 2010). As a result, an increase in the level of self-efficacy fosters users' motivation to share their knowledge (Kankanhalli et al., 2005) and to provide useful advice in professional online communities (Wasko & Faraj, 2005).

However, the lack of knowledge self-efficacy diminishes users' motivation to share their knowledge and opinions (Tseng & Kuo, 2010). In a professional online community, a user is unlikely to contribute knowledge unless he or she has knowledge to contribute (Wasko & Faraj, 2005). Likewise, users tend not to share knowledge in intra-organisational professional online communities when they have little confidence in the helpfulness of their own knowledge (Ardichvili et al., 2003).

To some extent, self-efficacy represents an important personal factor that may affect the degree of influence of self-determined motivation on behavioural intention (Wang & Noe, 2010). Self-efficacy is relevant to one's future intentions to perform a specific task (Hasan, 2006). In addition, prior research suggests that high knowledge self-efficacy is related to an individual's powerful self-motivation (Lai & Hsieh, 2013). Several studies have investigated the moderating role of self-efficacy. For example, Lin et al. (2013) show that higher self-efficacy leads to a higher positive relationship between intrinsic motivation and behavioural intention, demonstrating a moderating effect of self-efficacy on the relationship between intrinsic motivation and behavioural intention. This study attempts to test the effects of knowledge self-efficacy on the relationships between users' different types of motivation and their intention to evaluate the quality of knowledge contributions in professional online communities. This leads to the hypotheses:

Hypothesis 15: Users' perceived knowledge self-efficacy moderates the relationship between autonomous motivation and their intention to evaluate the quality of knowledge contributions in professional online communities.

Hypothesis 16: Users' perceived knowledge self-efficacy moderates the relationship between controlled motivation and their intention to evaluate the quality of knowledge contributions in professional online communities.

3.3.4 Control Variables

Previous literature suggests that age (Cameron & Butcher-Powell, 2006; Phang et al., 2009), gender (Lin, 2007; Phang et al., 2009), education background (He & Wei, 2009),

and work experience (Jian & Jeffres, 2006; Phang et al., 2009) may affect user intention to participate in professional online communities. In order to rule out other possible effects that are unrelated to the hypothesised relationships, this study controls for the aforementioned four factors because of their potential influence on user intention to evaluate the quality of knowledge contributions in professional online communities.

In summary, following the motivational process depicted in Figure 3.1, this section has discussed the relationships involved in the motivational process towards users' intention to evaluate the quality of knowledge contributions in professional online communities. The hypothesised relationships are presented in a research model. As shown in Figure 3.2, the research model depicts that user intention to evaluate the quality of knowledge contributions in professional online communities might be influenced by two types of self-determined motivation (i.e., autonomous motivation and controlled motivation), which in turn could be affected by a number of social factors. These factors include users' trust in peers and in the user involvement mechanism of knowledge evaluation, the perceptions towards their online reputation and reciprocal relationship, and users' affective and normative community commitment. In addition, the research model shows a possible moderation effect of knowledge self-efficacy on the relationships between autonomous motivation and intention and between controlled motivation and intention. Four control variables identified from the literature are also included in the research model.

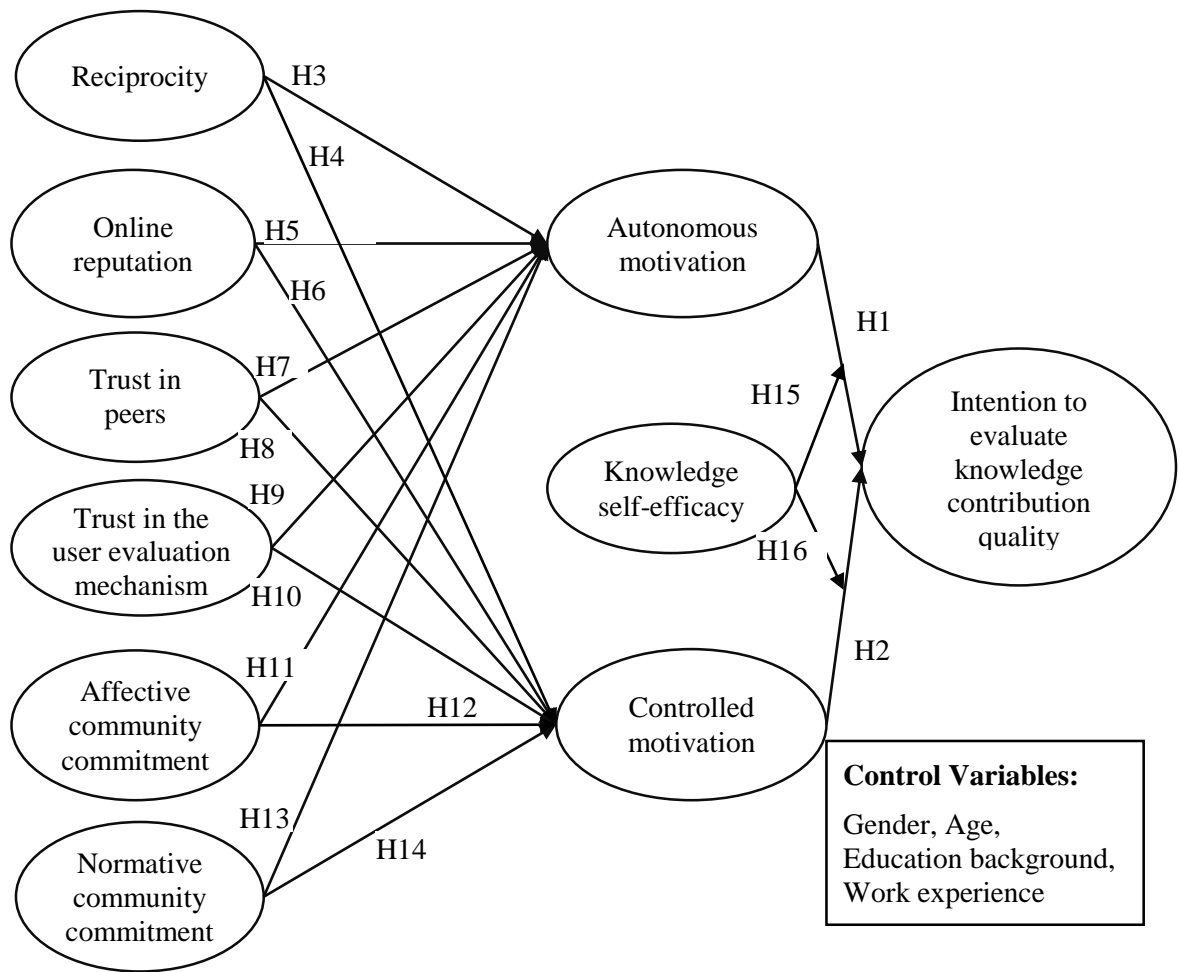


Figure 3.2. The research model and the hypothesised relationships

3.4 Summary of Chapter Three

In this chapter, an integrated theoretical framework was proposed to help understand the motivational process underlying users' intentional participation in the evaluation of the quality of knowledge contributions in professional online communities. Three theories, namely SET, CT, and SDT, were employed as the theoretical foundations to develop the theoretical framework. Based on the theoretical framework and its theoretical foundations, a research model that specifies the hypothesised relationships was generated. The following chapter discusses the research methodology and research design for resolving the research questions put forth in Chapter One by testing the hypotheses generated in Chapter Three.

CHAPTER Four: Research Methodology

4.1 Chapter Overview

This chapter justifies the research methodology used in this study. It starts with an explanation of the philosophical paradigm used in this study, followed by the research method employed to fulfil the research objective and to answer the research questions. It then gives details of the research design, as well as the data collection instrument and the procedures of survey administration. Additionally, this chapter discusses the data analytical techniques used in this study. Figure 4.1 illustrates the logical flow of details presented in this chapter.

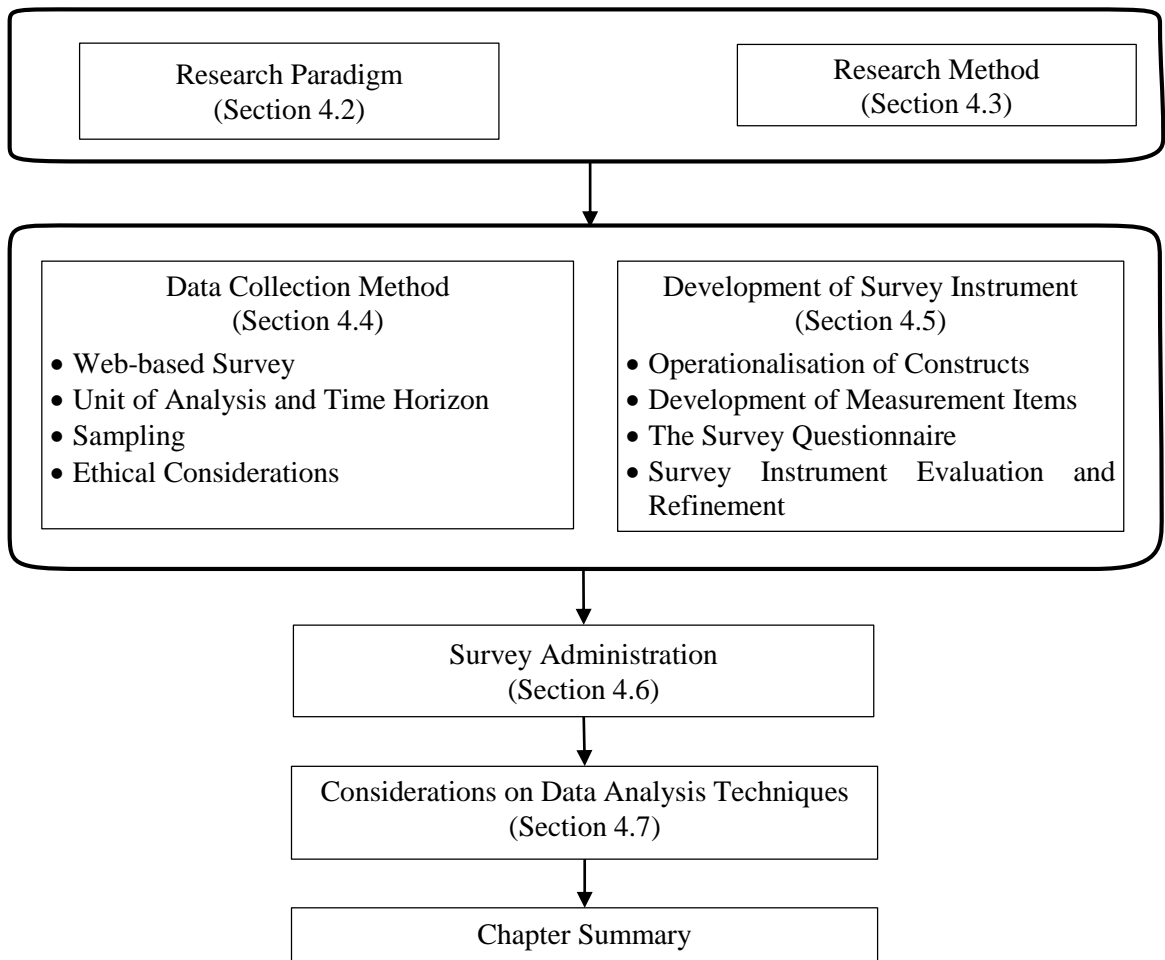


Figure 4.1. An overview of Chapter Four

4.2 Research Paradigm

Underpinning the research methodology is the research paradigm that the researcher follows. A paradigm is “a cluster of beliefs and dictates which for scientists in a particular discipline influence what should be studied, how research should be done, [and] how results should be interpreted” (Bryman, 2012, p. 605). In general, researchers are guided by three major research paradigms: the positivist paradigm, the interpretive paradigm and the critical paradigm (Sarantakos, 1998). These paradigms can be differentiated in terms of perception of reality, perception of human beings, the nature of science, and the purpose of social research (Sarantakos, 1998).

The positivist paradigm assumes that there exists one true social reality which can be uncovered by means of a rigorous empirical study. The empirical study generally involves proposing hypotheses, forming models, quantifying measures of variables, and drawing inferences from samples to populations (Chen & Hirschheim, 2004). Researchers are not supposed to impose deterministic perspectives on the observed phenomenon (Chen & Hirschheim, 2004). Following this assumption, a natural human activity can be predicted given that researchers distance themselves from research participants and from whom data are collected, and interpret research results objectively (Bryman, 2012).

The interpretive paradigm suggests that social reality is constructed while human beings interpret the social context subjectively. As a result, human behaviour is believed to be unpredictable (Johnson & Onwuegbuzie, 2004). In addition, the best way to understand social phenomena is thought to be through people’s subjective interpretation rather than the researcher’s objective assessment (Chen & Hirschheim, 2004). Within this paradigm, researchers are encouraged to interact directly with participants whose experiences towards certain issues are treated as the primary sources of understanding a phenomenon (Chen & Hirschheim, 2004). Thus, researchers can develop subjective meanings from individuals’ perspective in order to understand a certain phenomenon (Creswell, 2009).

Unlike the other two paradigms, the critical paradigm holds the assumption that social reality is shaped by a combination of social, political, cultural, economic, ethnic, and gender values (Guba & Lincoln, 1994). Within this paradigm, a research’s main objective is to form an apprehensible reality on the basis of different aspects of values to which an individual is exposed to.

For this study, the positivist paradigm is identified to be the most suitable among the three paradigms described above. This study follows the positivist paradigm for its relevance to achieving the research objective which is to predict user intention to evaluate the quality of knowledge contributions in professional online communities. IS research, dealing with the interaction of people and technology, is considered to be part of social science (Hevner et al., 2004). This study belongs to behavioural science which is a subset of social science. More importantly, given that the characteristics (e.g., age, education background and etc.) of users of professional online communities may differ, a positivist perspective is appropriate to reach an understanding of user motivation in a general term.

Following the positivist perspective, behavioural science research attempts to develop and justify theories which explain or predict human phenomena regarding the use of information systems. In order to achieve these research goals, empirical data need to be collected from a portion of all users of a specific information system. The reason for doing so is because positivism holds that reality is independent of human consciousness (Sarantakos, 1998). As a consequence, users of a specific information system should see reality objectively in the same way and be rational individuals whose behaviour is learnt through experience in reality. Within the positivist paradigm, a research problem is defined in Chapter One, followed by a review of related literature in Chapter Two and the development of hypotheses in Chapter Three. Next, considerations on research design are demonstrated in Chapter Four, while Chapter Five presents the data analysis procedures and results. Finally, the main findings are discussed in Chapter Six followed by theoretical and practical implications in Chapter Seven.

4.3 Research Method

In general, there are three research methods: qualitative, quantitative, and mixed method (Creswell, 2009). A fundamental distinction between quantitative and qualitative research is that while the former typically collects numerical data and conducts statistical analysis or algorithmic application, the latter mainly focuses on gathering and interpreting textual data (Chen & Hirschheim, 2004). In some cases, both quantitative and qualitative methods can be used together in one research study, which is referred to as a mixed method. The two research methods can be mixed in various combinations of sequences and emphasis (Chen & Hirschheim, 2004).

The design of a research method is driven by the objective of the study. Generally, there are two types of research objective: exploratory and explanatory. Exploratory research is to help researchers to become familiar with the phenomenon of interest, of which little is known, and generate information to identify different concepts or provide a basis for measuring a concept (Malhotra & Grover, 1998). To develop rich insight about a phenomenon, explanatory research is generally used to examine the causal relationships among different concepts (Malhotra & Grover, 1998).

As mentioned in previous chapters, the objective of this study aims to investigate, hypothesise, and test how social factors affect motivation which in turn influences professionals' intention to evaluate the quality of knowledge contributions in professional online communities. As a result, this study is explanatory in nature with the goal of examining the causal relationships between social factors and motivation and that between motivation. Accordingly, this study tests associated hypotheses and interprets the results in order to theorise about professionals' behavioural intention towards evaluating the quality of others' knowledge contributions in professional online communities (Malhotra & Grover, 1998).

In order to answer the research questions by examining the hypothesised relationships, quantitative research methods are chosen for this study. On the one hand, quantitative research methods can provide explicit guidance on developing numeric measurements for observations in order to predict a phenomenon with statistical evidence (Creswell, 2009). On the other hand, in qualitative research, data collected are mostly in a non-numerical form which normally is used to describe and understand a phenomenon. Quantitative research design is helpful to gather numeric data to test the hypotheses (Sekaran, 2010) developed in Chapter 3. In a quantitative research design, it is possible to generalise research findings to the whole population of the phenomenon (Sekaran, 2010), which is what this study attempts to achieve.

Survey is chosen over experimental research for this study for a few reasons. First, research is suitable to provide guidance to collect quantitative data to describe variables of interest from a targeted sample of professionals who use online content for work-related issues. Second, survey research allows the researcher to test hypotheses proposed in Chapter 3 (Newsted et al., 1998). Using data gathered from participants in natural settings without manipulating the study environment, survey research produces statistical evidence to help the researcher to examine the relationships between identified social

factors and different types of motivation and that between motivation and users' intention to evaluate the quality of knowledge contributions. Third, survey research makes it possible to generalise the research findings based on data collected from a sample, compared to experimental research (Creswell, 2009). Thus, inferences can be made about certain characteristics and behaviour of the population studied and sometimes about that of other similar populations (Newsted et al., 1998).

Despite the above mentioned advantages, possible errors may arise in the process of conducting a survey research. According to Bryman (2012), there are two main sources of errors: 1) the sampling process which determines the ability to generalise the research findings and 2) the conduct of data collection and processing which affects the validity of the measurement. Thus, this study takes extra caution in handling these possible errors when conducting a survey research, as shown in Figure 4.2. First, this study employs appropriate sampling techniques, which are illustrated in detail in Section 4.4.3, to increase the generalisability of its findings. Second, the survey instrument for this study is carefully designed using simple and precise question wording and administrated in rigorous settings, details of which are described in Section 4.5 and Section 4.6 respectively. To further ensure the validity of the measurement, the collected data are properly handled as explained in Section 4.7.2.

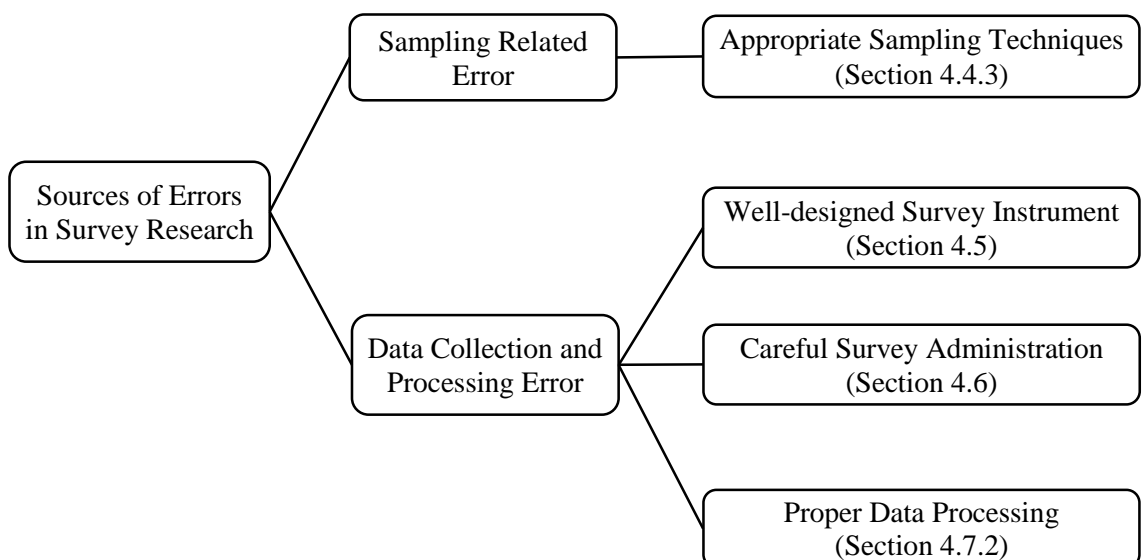


Figure 4.2. Sources of errors in survey research and how to eliminate them
(Adapted from Bryman [2012])

4.4 Data Collection Methods

4.4.1 Web-Based Survey

For numerous reasons, this study chose a web-based survey over other means, such as a paper-based survey and an email-based survey. First, the purpose of this study suggests that a web-based survey is an appropriate method to collect empirical data to investigate user involvement in evaluating content in professional online communities. A professional online community, which is by nature accessible via the Internet, is a place where people can obtain, share, and exchange professional knowledge. As a result, users of professional online communities refer to a sub group of the Internet-based population, which lead the researcher to use a web-based survey to reach and invite these users to participate in this study regarding their online behaviour (Wright, 2005).

Second, distributing the questionnaire through a web-based survey increases the likelihood of reaching a large sample at a low overall cost and a quick distribution speed (Cheung & Lee, 2009). This is because, with the increasing availability of worldwide Internet access, a web-based survey makes it possible to reach a sample regardless of geographic locations and time differences. It is important to have an adequate sample size for conducting quantitative research. Furthermore, examining the relationships between constructs using a large sample size increases the ability to generalise the research findings.

Third, a web-based survey distances the researcher from participants. Thus, there is no intervention of a researcher when participants are completing the self-administrated questionnaire. Ensuring that the participants do not know the researcher personally and vice versa can help reduce the response bias because participants may give biased responses if they know the researcher (Andrews et al., 2003).

Fourth, a web-based survey provides response control functions to ensure the quality of responses from participants while allowing the researcher to have the flexibility in designing a survey. For example, it can usually be set up to make sure that participants complete the questions which are required to be answered. This function can help reduce missing data (Andrews et al., 2003). In addition, certain settings of a web-based survey are able to prevent the same IP address from taking the survey multiple times.

Lastly, using a web-based survey makes data entry for analysis easy. A web-based survey automatically stores participants' responses in a database, which eliminates transcription errors. Then, participants' responses can be exported directly from the survey website to SPSS formats for analysing the data.

4.4.2 Unit of Analysis and Time Horizon

Because the target participants are users of professional online communities, it was possible to gather the empirical data needed for this study from individual users of these communities. This suggests that the unit of analysis is each individual user because this study focuses on individual users' intention towards getting involved in the evaluation of others' knowledge contributions. In addition, as mentioned at the beginning of this chapter, this study is interested in users' behavioural intention, which does not necessarily involve comparison over a period of time. This suggests that using data collected at one point in time is sufficient to find the answers to the research questions of this study (Sekaran, 2010). Thus, this survey research collected cross-sectional data to study the effects of social factors on behavioural intention.

4.4.3 Sampling

Sampling in a survey research involves identifying a representative subset of the population of interest to the undertaken research. The purpose of sampling is to gather information on the characteristics of the population from a sample to draw conclusions that are generalisable to the population (Sekaran, 2010). According to Sekaran (2010), the sampling process mainly involves defining the population, determining the sample frame and sampling design, and executing the sampling process, each of which is illustrated below.

The Population and the Sample Frame

The population of interest to this study refers to professionals who obtain, share, and exchange professional knowledge in any professional online communities. However, it is impossible and impractical to compile a complete list of all elements in the population.

First, the number of professional online communities is difficult to specify. Second, it is not possible to obtain a complete list of users of a professional online community because the companies or organisations which manage professional online communities may choose not to release information about the size of the population (Lyons et al., 2003). Besides, even if these companies or organisations are willing to provide such information, it may not be accurate because some people visit and contribute to an online community without becoming registered users, while some registered users are no longer active in the community (Preece & Shneiderman, 2009).

In addition, one of the characteristics of the population is that users can be working in different professions. According to the International Labour Organisation (2008), these professions are business and administration, health, information and communications technology, legal, social and cultural, science and engineering, and teaching. Users who work in different professions may visit different types of professional online communities because these communities usually provide knowledge in their specific domain. This suggests that selecting a sample that possibly covers diverse professions was necessary to increase the sample's representativeness of the population. This was done by choosing professional online communities for each type of profession to be the platforms for reaching out to potential respondents. The procedure of selecting professional online communities is explained in detail in Section 4.4.3.

As described in Section 2.2.2, people who become involved in the evaluation of knowledge quality primarily are knowledge seekers. According to Preece and Shneiderman (2009), seeking knowledge is the first and foremost activity that users can do in professional online communities. In other words, people who visit a professional online community are able to get involved in evaluating the quality of knowledge. Although people who visit professional online communities may be registered users or anonymous users without becoming registered, there seems no significant difference between the likelihood of registered and anonymous users' participation in community activities (Lampe et al., 2010). Noting that people who visit professional online communities may not always be professionals, a filter question was set up at the beginning of the questionnaire to allow only those who are professionals to take part in the survey.

Therefore, a feasible sample frame for this study comprises professionals can access to professional online communities which can be identified by the researcher and focus on different professions.

The Sampling Design

An appropriate sampling design for this study was chosen after carefully studying the characteristics of the population and the sample frame along with the consideration of the research objective. Probability sampling designs is deemed suitable for this study because it is important for this study that the sample is representative of the population. Table 4.1 summarises the probability sampling designs.

Among all the probability sampling designs, stratified random sampling was considered the most appropriate for this study. First, as mentioned above, the population for this study was divided into meaningful groups by profession. In this case, stratified random sampling is more efficient compared to other probability sampling (Sekaran, 2010).

Second, cluster sampling design, which suggests choosing some of the groups, was deemed not suitable. This is because this study aims for a sample consisting of users with all types of professions, despite the sampling process requiring a grouping of the population based on profession.

Third, simple random sampling and systematic sampling were deemed impractical for this study because, as noted above, it is impossible to have a list of the elements composing the population. On the other hand, double sampling was not suitable for this study as it is not an aim of this study to examine the sample or a subset of the sample twice.

This study therefore adopted disproportionate stratified random sampling. Compared to a proportionate approach, disproportionate stratified random sampling is able to take care of the variability in the different groups (Sekaran, 2010). For this study, users in different professions who visit corresponding professional online communities may vary in their age group, gender, education background, and work experience. In order to control the effect of the demographic characteristics of the sample in the research model, the disproportionate approach was applied.

Table 4.1. Probability Sampling Designs

Sampling design	Description	Advantages	Disadvantages
Simple random sampling	All elements in the population are considered and each element has an equal chance of being chosen as the subject	High generalisability of findings	Not as efficient as stratified sampling
Systematic sampling	Every nth element in the population is chosen starting from a random point in the sampling frame	Easy to use if sampling frame is available	Systematic biases are possible
Stratified random sampling	Population is first divided into meaningful segments; thereafter subjects are drawn <ul style="list-style-type: none"> • Proportionate • Disproportionate Based on criteria other than their original population numbers	Most efficient among all probability designs All groups are adequately sampled and comparisons among groups are possible	Stratification must be meaningful. More time-consuming than simple random sampling or systematic sampling Sampling frame for each stratum is essential
Cluster sampling	Groups that have heterogeneous members are first identified; then some are chosen at random; all the members in each of the randomly chosen groups are studied	In geographic clusters, costs of data collection are low	The least reliable and efficient among all probability sampling designs since subsets of clusters are more homogeneous than heterogeneous
Double sampling	The same sample or a subset of the sample is studied twice	Offers more detailed information on the topic of study	Original biases, if any, will be carried over. Individuals may not be happy responding a second time

Source: Sekaran (2010, p. 279)

The Sampling Process

The sampling process of this study involved five steps. First, a search for Chinese professional online communities was facilitated by using a popular Chinese search engine (i.e., Baidu). Keywords that were used for searching included the term “online community” or similar terms, such as “virtual community”, “online forum”, “blog” etc., and the name of each profession listed in the professional category of the International Standard Classification of Occupations (International Labour Organization, 2008).

Second, professional online communities found in the search process were screened based on two criteria: being active and having website features for users to rate, vote, and similar actions. Following Ridings et al.’s (2002) suggestion, a number of criteria were used to identify active communities: (1) at least 10 postings per day, (2) at least 15 different individuals posting over 3 days, and (3) at least 80% of postings with at least one reply per day. Meanwhile, each active professional online community also needed to have a feedback system for users to provide feedback in the form of rating, voting, and other similar forms.

Third, the researcher contacted the administrator of each professional online community identified in the second step to seek the administrator’s permission and support to post a message in the community inviting users to participate in the survey. The reason for doing this was to increase the response rate because without permission from the management of the community the invitation message may have been treated as spam, resulting in its deletion (Evans & Mathur, 2005). Therefore, only professional online communities in which the researcher was permitted to post the survey invitation message were sampled. In total, 30 professional online communities were identified at the end of this step. There was one online community, Tianya Forum (<http://bbs.tianya.cn/>), which had forums for all of the 6 professions. There were 14 professional online communities focusing on two professions: 7 for business and administration and 7 for information and communications technology. The number of professional online communities focusing on other professions were 5 for science, 4 for health, 3 for teaching, and 2 for legal, social and cultural. The URLs of these professional online communities are listed in Appendix D.

Fourth, an invitation message regarding the recruitment of participants for the survey was posted on professional online communities which were identified in the previous step. Mostly, the invitation message was posted in the lounge areas of selected online communities where users usually have off-topic discussions. Registered and non-

registered users who visit the lounge areas were expected to be self-selected to take part in the survey if they were interested in it.

Fifth, prior to starting to take part in the survey, users who clicked on the survey link were asked whether they were working in any professions listed in the professional category of the International Standard Classification of Occupations. Only those who answered yes to this question were included in the sample for this study and allowed to proceed to the completion of the questionnaire. Users who were not professionals were displayed with a gratitude message and were directed to exit the survey. The details of setting up the filter question are included in Section 4.5.3.

4.4.4 Ethical Considerations

Ethics is an important issue in a research studying a phenomenon on the Internet (Berry, 2004). The ethical considerations of the data collection process mainly aim to protect all parties that are involved in the research from impairment or adverse consequences resulting from their involvement in the research (Sekaran, 2010).

The data collection process in this study was guided by the ethical guidelines that are set by the Auckland University of Technology Ethics Committee (AUTEC). Following the ethical guidelines, an information sheet was produced. Ethical approval for collecting data from people was obtained from AUTEC prior to conducting the actual survey. The ethics application approval letter and the information sheet are available in Appendices C and E. The information sheet provided participants with an introduction to this study and the researcher, the partnership between the researcher and participants, the voluntary nature of participation, and the protection of participants' privacy and confidentiality.

The information sheet began with introductions of the research and the researcher. It stated that this study was part of a PhD programme with an objective of investigating users' intention to take part in evaluating the content of professional online communities. In addition, contact information was disclosed to participants who were encouraged to contact the researcher or AUTEC for more information about the research.

Second, as this study is interested in the behavioural intention of professional people in terms of evaluating online work-related knowledge, there was a partnership between the researcher and professional people who seek and share work-related knowledge in online

spaces. While their participation in the survey helped the completion of this study, they were provided with the opportunity to access a summary of the research findings which could be beneficial to them.

Third, as aforementioned, participants were made aware that taking part in the survey was entirely voluntary. In addition, they had the right to be left alone and to withdraw their participation in this study at any stage towards the completion of the survey.

Fourth, participants were informed that their participation in this study was completely anonymous. Although the questionnaires in this study contained some demographic questions, the anonymity of the survey meant that participants could not be identified. In addition, the privacy and confidentiality of participants were well taken care of. The collected data was stored in a secured place to which only researchers who were involved in this study had access. Moreover, participants were assured that the information they provided was only to be used for the purpose of academic research and their responses were not related to them personally.

4.5 Development of a Survey Instrument

The development of a survey instrument involves a systematic process which involves 3 steps, including 1) operationalisation of constructs, 2) development of measurement items, and 3) items refinement (MacKenzie et al., 2011). Each step depicted in Figure 4.3 is explained in detail in this section.

4.5.1 Operationalisation of Constructs

Constructs which are of interest to this study are identified and discussed in Chapter 2. The constructs are, to some extent, abstract and unobservable, which suggests that these constructs need to be translated into measurable elements so as to develop a set of quantifiable measurements for each construct (MacKenzie et al., 2011). Table 4.2 provides a summary of the nine constructs in this study, together with their operational definitions and some related literature.

The definition of each construct specifies the entity to which it applies, as well as the phenomena and general type of property to which the construct refers (MacKenzie et al.,

2011). In this study, the entity to which each construct applies is an individual user in a professional online community. While ‘intention to get involved in evaluating user contribution quality’ refers to a thought of a user, the remaining constructs refer to each user’s beliefs about trust in user involvement in evaluating content in professional online communities, trust in other users, reputation in these communities, reciprocity, community commitment, and knowledge self-efficacy when it comes to evaluating the quality of knowledge contributions.

In addition, the definition of each construct clarifies a set of fundamental attributes of the construct which are necessary and need to be sufficient (MacKenzie et al., 2011). Each definition is expressed in a way where both the common and unique attributes of the defining construct and what is inclusive in the construct are described.

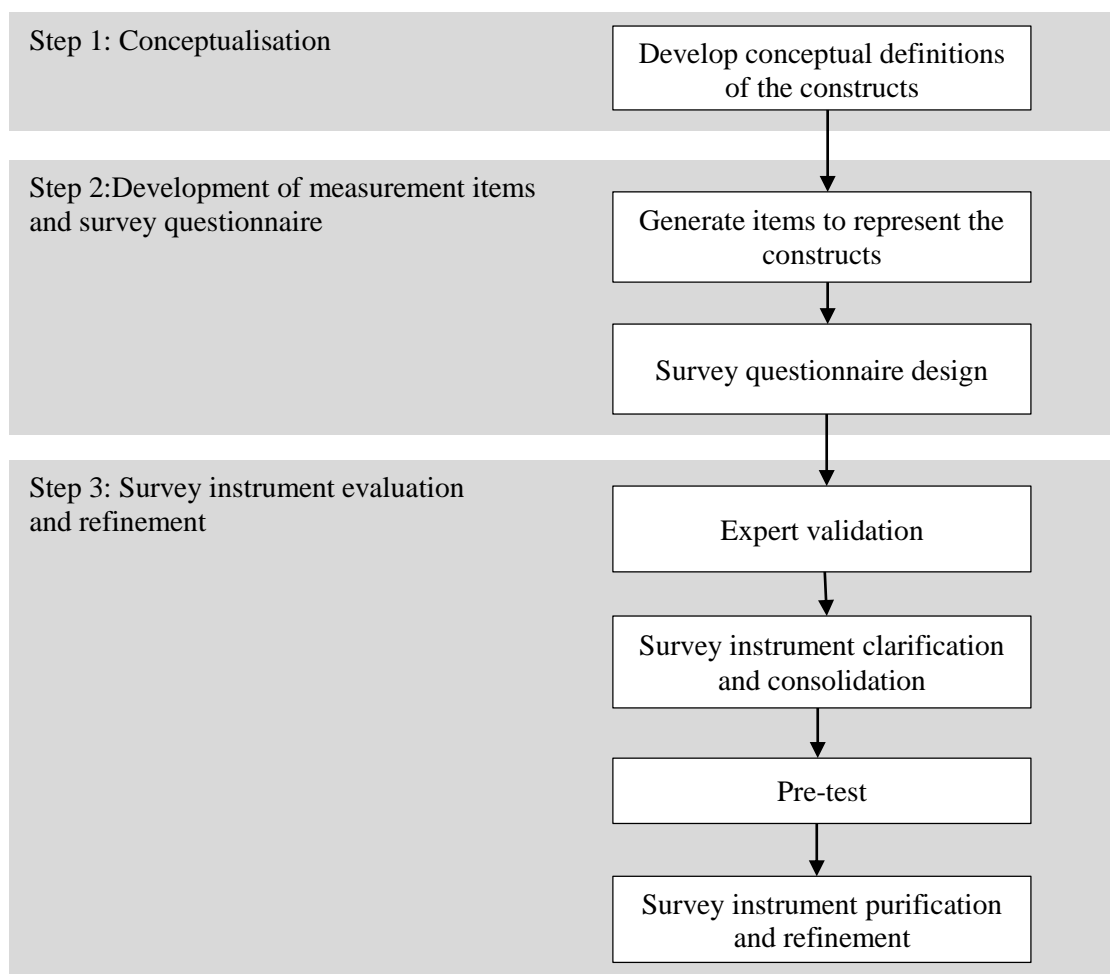


Figure 4.3. Overview of survey instrument development procedure
(Adapted from MacKenzie et al. [2011])

Table 4.2. Definitions of Constructs

Construct	Definition	Related literature
Reciprocity	The belief that involvement in evaluating user contribution quality can lead to the future acquisition of high-quality knowledge from a professional online community.	Kankanhalli et al. (2005)
Online reputation	The belief that involvement in evaluating the quality of knowledge contributions can lead to an increase in status and respect in a professional online community.	Jin et al. (2013)
Trust in peers	The belief that other users in a professional online community are trustworthy.	Fang and Chiu (2010)
Trust in the user evaluation mechanism	The belief that that it is trustworthy to have users involved in evaluating the quality of knowledge contributions as a means of improving the accessibility of high-quality user contributions.	Fang and Chiu (2010)
Affective commitment	A bond between a user and a professional online community that is based on the user's strong emotional attachment to the community.	Bateman et al. (2011)
Normative commitment	A bond between a user and a professional online community that is based on the user's sense of obligation to the community.	Bateman et al. (2011)
Autonomous motivation	The reasons for performing an activity come from inside the self, such as volition, psychological freedom, and reflective self-endorsement.	Vansteenkiste et al. (2010)
Controlled motivation	The reasons for performing an activity come from outside the self, such as pressure and coercion to think, feel, or behave in particular ways.	Vansteenkiste et al. (2010)
Intention to evaluate the quality of user contributions	The degree to which a user has formulated conscious plans to evaluate or not evaluate content in a professional online community in the future.	Davis (1989)

4.5.2 Development of Measurement Items

Once each construct has been conceptually defined, a set of measurement items needs to be developed to measure the construct (MacKenzie et al., 2011). This process involves producing a set of elements that fully represents all of the clarified attributes of the construct (MacKenzie et al., 2011). The measurement items used to measure each construct in this study were adapted from previously validated items by carefully revising them to fit the context of this study.

The three items measuring professionals' intention to get involved in evaluating content in professional online communities were adapted from Venkatesh et al. (2003). Items used by Malhotra et al. (2008) were adapted to measure the two types of motivation, namely autonomous motivation and controlled motivation. Normative commitment and affective commitment were measured using items adapted from Bateman et al. (2011). Items measuring reciprocity, reputation, and trust were adapted from Kankanhalli et al. (2005), Tong et al. (2007), and Hsu et al. (2011), respectively.

Using previously validated items has several advantages when employing survey research. First, the quality of the adapted items in regard to their reliability and validity has been assessed in prior research with a similar context (Bryman & Bell, 2007). This gives the researcher confidence that these items are likely to yield satisfactory reliability and validity in this study. Second, repeatedly testing the construct using the same set of items contributes to establishing the nomological validity of the construct with a system of related constructs or across a variety of research contexts (Straub et al., 2004). Thus, measuring the construct using the same items in different contexts increases the likelihood of extending the appropriate use of this construct and related constructs to a larger context.

All the constructs were measured using multiple items. Specifically, intention had three items while affective community commitment and controlled motivation had five items for each. All the remaining constructs were measured using four items. A seven-point Likert scale was used to measure all of the aforementioned constructs, ranging from 1 (strongly disagree) to 7 (strongly agree). A Likert scale requires participants to make a decision on the degree of agreement with a statement. It has been widely used in social science and IS research for its simplicity and ease of use (Neuman, 2011).

4.5.3 The Survey Questionnaire

The adopted and modified measurement items were then presented in a self-administrated questionnaire as statements. One reason for using a self-administrated questionnaire is because it has the advantage of high efficiency in terms of time, energy, and costs over other types of data collection, such as interviewing and observation (Sekaran, 2010). The questionnaire used a bilingual version in Chinese and English, which was approved by the AUTC. The questionnaire was initially organised in the following sequence:

A welcome page was placed at the beginning of the questionnaire followed by the information sheet approved by AUTC. The following page included two filter questions asking participants whether they are professionals and whether they had experience of evaluating user-contributed knowledge by giving feedback, in the forms of ratings, votings, and similar forms, in professional online communities. The third page of the questionnaire showed an instruction and the definition and some examples of professional online communities. The following page included questions regarding statements presenting all measurement items with the definition and examples of professional online communities being displayed at the top of each page.

The remaining pages of the questionnaire asked questions about the participants' experience of using professional online communities and their demographics. Relevant demographic questions included gender, age, education background, work experience, place to search for knowledge online and benefits gained from professional online communities. These demographic questions were placed at the end of the questionnaire in order to prevent respondents from dropping the survey before answering key questions associated with constructs in the research model, which was an attempt to increase the response rate (Andrews et al., 2003).

4.5.4 Survey Instrument Evaluation and Refinement

In order to improve the quality of the survey instrument, the full English questionnaire with adopted and modified measurement items and demographic questions was examined and refined in two steps: expert examination and a pre-test (Straub et al., 2004).

First, expert examination involved checking the face validity of the measurement items and the clarity of questions and answering instructions. This process was necessary

because 1) invalid measurement items could have threatened the reliability of the research findings and 2) unclear statements and instructions may have lead potential respondents to become frustrated and then drop the survey without completing the entire questionnaire (Ray & Tabor, 2003). 10 experts – 5 academics who had experience with survey research and user behaviour research and 5 practitioners who had experience in using professional online communities – were approached for their opinions on the questionnaire design and user providing feedback in these communities. They were provided with a printed version of the survey questionnaire.

The 5 academics were selected based on their experience with survey research and user behaviour research in the IS field. They were asked to provide feedback on the content clarity and the representation of the adapted items for measuring the construct of interest and the overall design of the survey questionnaire, particularly the sequence of presenting the questions that might lead to respondents' bias (Ray & Tabor, 2003). Although they were also invited to suggest new items for inclusion and inappropriate items for deletion to enhance the measurement of the constructs, they suggested no changes to the items in use except for few wordings. With careful consideration, several adjustments were made to improve the flow of the questions based on feedback from IS academics. For example, questions relating to participants' experience of using professional online communities were moved to before presenting questions measurement items in order to get participants familiar with the context of the survey.

After the questionnaire had been strengthened based on feedback from IS academics, 5 practitioners were invited to give feedback, particularly on the clarity of the instructions and statements of measurement items in the questionnaire. The 5 practitioners involved were two IT professional, two accounting professionals, and one engineering professional who had experience in seeking knowledge related to their professional work from the Internet. This examination process was to identify whether there were ambiguous questions that may cause misunderstanding in order to ensure that the survey instrument could gather valid data. Based on the practitioners' feedback, some screenshots showing examples of website features for users to evaluate the quality of knowledge contributions in professional online communities were provided in the survey instruction section.

Second, upon completion of the expert examination, the refined questionnaire was put up in a web-based survey format which was hosted by www.sojump.com, a commercial survey platform. The web-based survey questionnaire was pre-tested to evaluate whether

its administration on an online platform was efficient and viable to increase participation in the survey (Göritz, 2006). Moreover, a pre-test is a preliminary trial of the survey instrument attempting to detect problems in the survey instrument design that may cause fatigue in respondents and stop them from completing the survey (Boudreau et al., 2001).

In this study, a pre-test was conducted with a group of 30 professionals between 24 June 2013 and 7 July 2013. During the pre-test, participants were asked to complete the survey questionnaire and provide feedback on the instrument design, for example layout, vision presentation, and length (Lewis et al., 2005). Overall, 18 participants completed the survey and spent, on average, 17 minutes. Feedback from participants suggested the welcome page was unnecessary because the invitation message contained similar information. They also mentioned that the participant information sheet was too long to read through. Based on their feedback, the welcome page was deleted from the survey instrument and the original participant information sheet was replaced with a succinct version with a link to the full copy. These changes shortened the survey questionnaire in an attempt to increase the response rate (Andrews et al., 2003).

When the English questionnaire was finalised, it was translated into Chinese by the researcher. Two IS researchers who have completed their PhD degree in English-speaking countries and are working in China were invited to translate this Chinese questionnaire into English. Then, they were invited to translate the original English questionnaire into Chinese. Based on the two English versions and two Chinese versions, the Chinese questionnaire were finalised to maintain the accuracy and consistency of the translation.

In the end, the survey questionnaire was presented in both English and Chinese. The final design of web-based survey is summarised in Figure 4.4 in the sequence of each section's appearance in the questionnaire. The survey started with two filter question asking people who entered the survey whether they were professionals and their experience in providing feedback in non-textual forms (e.g., rating, ranking, voting, and similar) in professional online communities. If participants' answer to the first filter question was no or they had not provided any non-textual feedback before, a "Thank You" message was played to appreciate these people's interest in the survey and willingness to help, indicating an end of their participation.

On the other hand, when participants' answer to the first filter question is yes and they have provided non-textual feedback before, participants were shown with a succinct version of the participation information sheet and a link to a full copy was also made

available to them. Next, participants were provided with an instruction and the definitions of key terms. Participants were then asked to answer questions related to their experience of using professional online communities and indicate their degree of agreeing with the statements of items measuring the constructs of interest to this study. These statements are listed in Table 4.3. Lastly, participants were encouraged to provide some demographic information such as gender, age, education background, and work experience. Once participants had responded to all the questions, a “Thank You” message was displayed to indicate an end of the survey. It was estimated that each participant would take around 15 minutes to complete the survey. A full version of the survey questionnaire is presented in Appendix H.

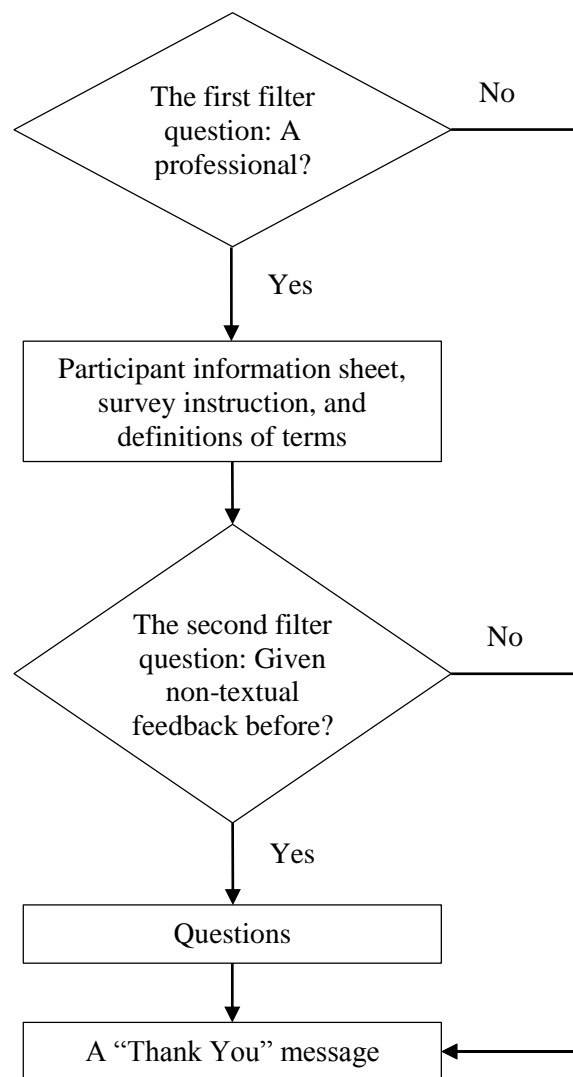


Figure 4.4. The web-based survey questionnaire design

Table 4.3. Items Related to Key Constructs in the Research Model

Item code	Item description
Reciprocity	
When I get involved in evaluating the quality of knowledge in an online community,	
REC1	I believe that I will find knowledge of high quality in the future because of my own evaluations.
REC2	I expect other users to evaluate the quality of knowledge that I need.
REC3	I expect to obtain knowledge of high quality from the online community when I need it.
REC4	I believe that knowledge I need will be evaluated by other users in the future.
Online reputation	
REP1	Evaluating the quality of knowledge would improve my reputation among other users.
REP2	When I evaluate the quality of knowledge, I can gain more respect than those users who do not.
REP3	Evaluating the quality of knowledge would let me gain increased recognition from other users.
REP4	I can enhance my image among other users by evaluating the quality of knowledge.
Trust in peers	
TIP1	I feel that users in online communities are generally reliable.
TIP2	I feel that users in online communities are generally honest.
TIP3	I feel that users in online communities are generally competent to help others enhance their knowledge.
TIP4	I feel that users in online communities will do everything within their capacity to help others.
Trust in the user evaluation mechanism	
TIUE1	I feel that users' inputs in evaluating the quality of knowledge are reliable.
TIUE2	I feel that users' inputs in evaluating the quality of knowledge are honest.
TIUE3	I feel that online communities inviting user feedback on the quality of knowledge are likely to care for users' need to obtain information of high quality.
TIUE4	I feel that online communities inviting user feedback on the quality of knowledge are competent to help users enhance their knowledge.
Affective community commitment	
ACC1	I feel that online communities inviting user feedback on the quality of knowledge are competent to help users enhance their knowledge.
ACC2	I would have a real emotional attachment to the online community.
ACC3	The online community would have a great deal of personal meaning for me.
ACC4	I would feel a strong sense of belonging to the online community.
ACC5	I would feel a strong connection to the online community.

Normative community commitment	
NCC1	I would feel an obligation to evaluate the quality of knowledge.
NCC2	I would feel guilty if I did not evaluate the quality of knowledge.
NCC3	I would evaluate the quality of knowledge because I had a sense of obligation.
NCC4	I would evaluate the quality of knowledge partly out of a sense of duty.
Autonomous motivation	
I would get involved in evaluating the quality of knowledge in an online community because	
AM1	I would enjoy doing it.
AM2	doing it would be fun.
AM3	I think it is personally important to me.
AM4	I personally like doing it.
Controlled motivation	
I would get involved in evaluating the quality of knowledge in an online community because	
CM1	it would bother me if I didn't.
CM2	I would feel bad about myself if I didn't.
CM3	I would feel ashamed of myself if I didn't.
CM4	other users would think that I should do it.
Knowledge self-efficacy	
KSE1	I have confidence in my ability to provide inputs that other users consider valuable to evaluate the quality of knowledge.
KSE2	I have the expertise needed to provide valuable inputs on evaluating the quality of knowledge.
KSE3	It does not really make any difference whether I add to the inputs that other users are likely to provide to evaluate the quality of knowledge.
KSE4	Other users can provide more valuable inputs on evaluating the quality of knowledge than I can.
Intention	
INT1	I intend to evaluate the quality of knowledge.
INT2	I predict I will evaluate the quality of knowledge.
INT3	I plan to evaluate the quality of knowledge.

4.6 Survey Administration

An invitation message regarding the recruitment of participants for the survey was posted in the lounge areas of the professional online communities identified in Section 4.4.3. An invitation message was posted initially instead of the full questionnaire to help build trust between participants and the researchers (Andrews et al., 2003). A link to the web-based survey site was provided at the end of the invitation message so that self-selected participants were able to take part in the survey by clicking on the link. The information sheet approved by AUTECH was provided to participants prior to entering the survey.

The invitation message outlined that this study was part of a PhD programme and that the objective of this study was to investigate users' intention to take part in the evaluation of the quality of user contributed knowledge in professional online communities. It also revealed that users were considered to be potential participants for this study because they were users of these professional online communities. In addition, potential participants were told in the invitation message that participation in this survey was voluntary and anonymous and that their identities would not be included or in any other way associated with their responses. Furthermore, they were informed that the results of their participation could suggest practical improvement on the features that enable their involvement in evaluating the quality of others' knowledge contributions, which could possibly enrich their further experience of being users of professional online communities.

The survey was made available online between July 2013 and September 2013. The survey was closed on 30 September 2013. In total, 274 completed responses were gathered. The next step was to analyse the collected data. Justifications for choosing appropriate data analysis techniques are presented in the following section and the actual data analysis procedures are reported in Chapter Five.

4.7 Data Analysis Techniques

Upon the completion of data collection, this study used Structural Equation Modelling (SEM) to analyse the dataset. SEM was appropriate for analysing quantitative data in this study because of its ability to examine the multiple relationships of variables with multiple indicators (Hair et al., 2010). Particularly, SEM integrates the assessment of the reliability and validity of the measurement model with the evaluation of the structural

model which can be built from the measurement model. In other words, SEM not only examines the relationships between a variable and its respective measurement items, but also evaluates the hypothesised relationship among variables.

4.7.1 Structural Equation Modelling

There are two types of SEM that are widely used. They are the covariance-based SEM (CBSEM) and the PLS-based SEM (PLS-SEM). This study chose CBSEM for a three reasons (Gefen et al., 2011).

First, CBSEM is appropriate for confirmatory research like the undertaken research. This is because CBSEM has its roots in the original development of the inferential test statistic and it relies on a measurement model which is carefully developed on a strong theoretical basis (Rönkkö & Evermann, 2013). By contrast, PLS-SEM is characterised as a suitable approach for conducting exploratory research (Gefen et al., 2011).

Second, CBSEM has the advantage of providing approaches for the researcher to reduce the effect of measurement errors over PLS-SEM (Rönkkö & Evermann, 2013). PLS-SEM does not allow the researcher to explicitly include the variance or covariance structure of the measurement errors in the measurement model, while CBSEM isolates the random measurement errors and the systematic measurement error in the measurement model (Gefen et al., 2011).

Third, CBSEM is sufficiently robust to avoid bias in the estimations of parameters in the structural model. Parameter estimates obtained from CBSEM are unbiased when distribution assumptions are met and are still robust to mild violations of those assumptions (Gefen et al., 2011). Although it can be argued that CBSEM underperforms PLS-SEM when the data are non-normally distributed (Rönkkö & Evermann, 2013), recent development in CBSEM software provides estimation methods that work with non-normal distributed data to yield accurate results (Gefen et al., 2011).

Thus, CBSEM was considered to be an appropriate data analytical technique for this study. There are a number of software packages for conducting CBSEM. These software packages, such as AMOS and LISREL, provide similar estimation functions to measure the measurement model and the structural model (Gallagher et al., 2008). In this study,

AMOS 22 was used for its friendly interface and more importantly its capability of working with SPSS concurrently.

4.7.2 Data Screening

Data screening is an essential and initial step in the data analysis stage. Examining the raw data gathered from a web-based survey not only allows the researcher to gain a basic understanding of the data and relationships between variables, but also ensures that data to be used for the analysis meets all of the requirements for the application of CBSEM (Hair et al., 2010). Data examination involves evaluating the impact of missing data, identifying outliers, and testing the statistical assumptions for conducting multivariate data analysis (i.e., SEM for this study).

Missing Data

Missing data can happen when a respondent leaves some items in a questionnaire unanswered (Karanja et al., 2013) or during data entry (Hair et al., 2010). It occurs when valid values for one or more variables in any of the observations are not available for analysis and may affect the generalisability of the results.

Outliers

An outlier is an observation “with a unique combination of characteristics identifiable as distinctly different from the other observations” (Hair et al., 2010, p. 73). Outliers are cases whose values are extreme compared to the rest of the observations and therefore can bias the results of any statistical analysis (Gao et al., 2008). In order to minimise the impact of outliers on the outcome of data analysis, the dataset must be checked for the purpose of detecting both univariate and multivariate outliers.

Testing the Assumptions of Multivariate Analysis

Any multivariate technique (including CBSEM) has underlying statistical assumptions in order to make statistical inferences and gain results (Hair et al., 2010). The complexity of the relationships in multivariate analyses implies that violation of one or more of the assumptions may result in biased statistical results (Hair et al., 2010). In addition, the complexity of the analysis procedures and results may mask apparent assumption violations, consequently misleading the interpretation of the results (Hair et al., 2010). Thus, it is essential to test the data for compliance with these statistical assumptions prior to using the data in multivariate analysis. Particularly, the assumptions of normality, linearity, and homoscedasticity are of significance to multivariate analyses such as CBSEM (Hair et al., 2010).

Normality is the most fundamental assumption in multivariate analysis. It refers to “the shape of the data distribution for an individual metric and its correspondence to the normal distribution” (Hair et al., 2010, p. 79). Similar to outlier analysis, normality analysis also involves univariate and multivariate normality. However, in most cases, assessing univariate normality for all indicators is sufficient at the data screening stage where the multivariate normality issue is not especially critical (Hair et al., 2010). Thus, this study examined univariate normality prior to deciding whether to proceed with a multivariate normality test. To examine univariate normality, a number of approaches can be useful, including statistical tests for skewness, kurtosis, and the Shapiro-Wilk test, as well as the graphical method by examining histograms (Meyers et al., 2013).

Homoscedasticity is another multivariate statistical assumption that a dependent variable exhibit equal levels of variance across all corresponding independent variables (Hair et al., 2010). Homoscedasticity is desirable because the absence of homoscedasticity can result in better predictions at certain levels of the independent variable than at others, which affects the results of hypothesis testing (Hair et al., 2010). In other words, the variance of the dependent variable being explained in the dependence relationship should not be concentrated in only a limited range of the independent variables. Residual scatterplots for each indicator can be used to provide graphical evidence of the presence of homoscedasticity (Pallant, 2010).

Finally, linearity is “an implicit assumption of all multivariate techniques based on correlational measures of association” (Hair et al., 2010, p. 85). The existence of nonlinearity between variables may cause the actual strength of the relationship being

underestimated (Hair et al., 2010). This is because a nonlinear effect is not represented in the correlation value which represents only a linear association between variables (Hair et al., 2010). Hence, it is always prudent to examine all relationships to identify any departures from linearity that may affect the correlation (Meyers et al., 2013).

4.7.3 Measurement Model Specification

Section 4.5.2 explains how items to be used to measure each construct were identified. Prior to analysing the data collected from a survey, the relationship between each item and its underlying construct needs to be logically and systematically specified and presented in a measurement model. This process mainly involves making a decision on whether the relationship between an item and its underlying construct is reflective or confirmative. It is important to properly specify a measurement model as either reflective or confirmative because misspecification can impact the results of evaluating the structural model, possibly misleading the research in the theoretical interpretation of the research results (Jarvis et al., 2012; Petter et al., 2012).

In this study, a reflective measurement model was considered appropriate to represent each construct. This decision was made by identifying the four characteristics of reflective and confirmative measurement models (Jarvis et al., 2003) along with a recap of the definitions of the constructs and the theory behind (Bollen, 2011).

First, the direction of causality between items and its underlying construct is a primary consideration in specifying a measurement model. If a change in a construct causes a change in an item, the direction of causality flows from the construct to its measurement item (MacKenzie et al., 2011). This implies a reflective measurement model because the chosen items are reflecting the characteristics of the construct (MacKenzie et al., 2011). However, if a change in an item results in a change in the construct which it intends to measure, the measurement model should be formative (Jarvis et al., 2003).

Second, the interchangeability of the items measuring the same construct is another criterion. When these items are interchangeable, a change in the value of one of the items is necessarily expected to be associated with a change in all of the other items (MacKenzie et al., 2011). In this case, the interchangeable items share a common theme, suggesting a reflective measurement model. Contrary to being in a reflective model, each item

specified in a confirmative measurement model should measure a unique aspect of a construct (Jarvis et al., 2003). In other words, an item cannot be replaced by another item which measures the same construct.

Third, the necessity of having covariance among the items of a construct offers a clue to determine whether a measurement model is a reflective one or a confirmative one. In a reflective measurement model, items of the same construct can covary with each other, which is not case for a confirmative measurement model (Jarvis et al., 2003).

Fourth, the expectation of these items having the same antecedents and consequences may imply whether the measurement model is reflective or confirmative. When all the items of a construct have the same antecedents and consequences, these items form a reflective measurement model for measuring this construct (MacKenzie et al., 2011). However, it is unnecessary for items in a confirmative measurement model to have the same antecedents and consequences (Jarvis et al., 2003).

4.7.4 Validating the Measurement Model

For the first stage of SEM, confirmatory factor analysis (CFA) is used to confirm that the measurement model represents the relationships between measurable items and the corresponding constructs (Hair et al., 2010). CFA requires that a researcher first defines constructs of interest and then assigns measurement items to each construct prior to conducting the analysis (Hair et al., 2010). These two prerequisites for conducting CFA are addressed in Section 4.5.1 and Section 4.5.2, respectively.

However, another factor analysis tool, exploratory factor analysis (EFA), can be conducted without knowing how many constructs really exist or which items belong with which constructs (Hair et al., 2010). EFA is suitable for exploring the data and providing a researcher with information about how many items and constructs are needed to best represent the data (Hair et al., 2010). Since a measurement model had already been specified, EFA was unnecessary in this study.

The results of CFA provide information on whether the relationships hypothesised in the measurement model are consistent with the sample data and the statistical significance of the individual relationships specified in the measurement model (Gefen et al., 2011). In

other words, CFA involves assessing the measurement model fit and the criteria for model validation, which are explained below.

Model Fit

There exists a variety of fit indices which reflect different aspects of model fit. Detailed discussions on fit indices can be found in research method literature (Hooper et al., 2008; Hu & Bentler, 1999; Schreiber et al., 2006) and literature in specific applied disciplines (e.g., marketing [Javis et al., 2003] and administrative and social science [Gefen et al., 2011]). One common theme in these discussions is that these fit indices fall into three categories: absolute fit indices, incremental fit indices, and parsimony fit indices.

First, absolute fit indices determine how well a pre-defined model fits the observed data. When calculating this group of fit indices, a model is evaluated independently without comparing it to any possible alternative models (Hair et al., 2010). The most fundamental absolute fit index is the chi-square statistic (χ^2) (Hair et al., 2010). The χ^2 , together with an appropriate level of significance, is believed, to some extent, to be an obvious and direct statistic for testing the model fit (Gefen et al., 2011) because a non-significant χ^2 (e.g., $p > .10$) means that the covariances predicted by the model are not significantly different than the sample covariances (MacKenzie et al., 2011). Nevertheless, the usefulness of the χ^2 is greatly undermined because it is sensitive to sample size, distributional assumptions, and model complexity (Hu & Bentler, 1999). For example, it becomes difficult to achieve satisfactory model fits as the sample size increases (Bagozzi & Yi, 2012).

As a result, the goodness-of-fit index (GFI) is introduced in an attempt to produce a fit statistic that is less sensitive to the sample size (Hair et al., 2010). However, it has been found that an increase in GFI is associated with an increase in the number of parameters estimated (Hooper et al., 2008), suggesting its sensitivity to model complexity. To overcome this disadvantage of GFI, the Root Mean Square Error of Approximation (RMSEA) is another measure that attempts to correct for both sample size and model complexity (Hair et al., 2010).

Second, moving one step further from absolute fit indices, incremental fit indices assess how well a specified model fits relative to a baseline model (Hair et al., 2010). One of the original incremental fit indices is the normed fit index (NFI). This is a ratio of the

difference in the χ^2 value for the fitted model and the baseline model divided by the χ^2 value for the baseline model (Hair et al., 2010). Unfortunately, NFI has the drawback of being sensitive to sample size (Hooper et al., 2008). As a result, the comparative fit index (CFI) is derived from NFI by taking the sample size into consideration. In addition, the CFI shows its relative insensitivity to model complexity (Hair et al., 2010).

Third, parsimony fit indices are designed specifically to provide information about which model among a set of competing models is the best. This set of fit indices includes the Parsimony Comparative Fit Index (PCFI) which considers the model fit relative to its complexity (Mulaik et al., 1989).

Each category of model fit indices discussed above shows a unique perspective to understand how well the specified model fits the sample data. Within each category, different fit indices have their advantages and disadvantages in terms of dealing with their sensitivity to sample size and model complexity. Thus, at least one fit index from each category was used in assessing the measurement model in this study (Hair et al., 2010). To be specific, this study chose two absolute fit indices (i.e., the χ^2/df statistics and the RMSEA and the SRMR), one incremental fit index (i.e., the CFI), and one parsimony fit index (i.e., PCFI). These indices were chosen over other indices for their insensitivity to sample size and model complexity (Hooper et al., 2008; Kim, 2005).

While a smaller value of χ^2/df or RMSEA indicate a better fit, a larger value of CFI or PCFI indicates a better model fit. A general guideline of the threshold values for the chosen indices is outlined in Table 4.4.

Table 4.4. A General Guideline for Assessing Model Fit

	Model fit index	Recommended threshold
Absolute fit indices	χ^2/df	≤ 3 (Hair et al., 2010)
	RMSEA	≤ 0.08 (Gefen et al., 2011; Hooper et al., 2008)
Incremental fit indices	CFI	≥ 0.90 (Gefen et al., 2011)
Parsimony fit indices	PCFI	≥ 0.90 (Mulaik et al., 1989)

Validity Considerations

Validity of a measurement model is a significant issue in survey research. For a research following a positivist paradigm, a properly validated measurement model gives the researcher more confidence that the data collected from the web-based survey could be useful for representing some characteristics of the population (Straub et al., 2004). In other words, the replicability of the research results depends highly on the validity and reliability of the adapted measurement items. Measurement model validity primarily involves considering the internal validity and the external validity of the measurement model where internal validity consists of content validity and construct validity (Gefen et al., 2000).

Content validity is concerned with whether or not the items of a construct in a specified measurement model are theoretically representative and appropriate of all possible means of measuring the construct (Lewis et al., 2005; Straub et al., 2004). Generally, content validity should be considered prior to assessing construct validity and reliability (Straub et al., 2004). This study attempted to increase the content validity through three strategies: literature review, expert review, and a pre-test. First, at the literature review stage, this study examined a large number of validated items that were used to measure each construct. Only items that reflected the essences of each construct relating to this study were chosen and adapted to be used. Second, the adapted items were reviewed and examined regarding their relevance and appropriateness to this study by a group of experts made up of both IS academics and professional people. Third, the refined items were further polished based on the results of testing them with a group of people who had used professional online communities searching for knowledge. The details of the three strategies are presented in the measurement item refinement stage as described in Section 4.5.4. In summary, as recommended by Straub et al. (2004), attempts made by this study fulfilled the necessary requirements for achieving content validity.

Construct validity is involved with the measurement of an item to support a particular construct which it is intended to measure (Sekaran, 2010). In other words, construct validity is concerned with the relationships between measurement items and their underlying constructs (Straub et al., 2004). Two commonly mentioned components of construct validity include discriminant validity and convergent validity, both of which can be estimated through CFA (Gefen et al., 2000).

Discriminant validity represents the degree to which a construct is truly distinct from other constructs (Hair et al., 2010). It can be assessed by following Gefen et al.'s (2011) recommendation that the square root of the average variance extracted (AVE) for each construct should be greater than the correlations between this construct and any other constructs.

Convergent validity refers to the extent to which all the items reflecting a specific construct are in agreement in measuring the same construct (Straub et al., 2004). It is an especially important issue for a reflective measurement model (Straub et al., 2004). Generally, convergent validity can be tested in two ways. First, the loading of an item on a construct is one important consideration of convergent validity. An item loading should be no less than 0.70, at the significant level of 0.05, in order to evidence that the construct is able to explain at least 50% of the variance of this item (Hair et al., 2010). Second, the AVE among a set of items measuring the same construct is a summary indicator of convergence among these items. An AVE for a construct greater than 0.50 is desirable because it suggests that the construct accounts for a majority of the variance in its indicators on average (MacKenzie et al., 2011).

Finally, external validity is another issue which is worth consideration in the validation of a measurement model. The purpose of establishing the external validity is to increase the likelihood of the generalisation of the research findings based on a sample to the population of interest (Creswell, 2009). This study used a web-based survey to reach a sample of diverse characteristics which were likely to represent the population.

Reliability Considerations

Construct reliability is concerned with the relationships between items measuring the same construct. The reliability of a construct is assessed independently of and is calculated separately from other constructs. One important aspect of construct reliability is the internal consistency of a set of items measuring the same construct (Hair et al., 2010). The value of internal consistency indicates whether the items within the construct have the same range and meaning; in other words, that they are measuring the same thing.

There are a number of ways to assess the internal consistency of a set of items, among which the traditional indicator is Cronbach's alpha (α) (Hair et al., 2010). The value of Cronbach's α provides an estimation of construct reliability based on the inter-

correlations among the items which measure the same construct. However, it is argued that Cronbach's α underestimates the internal consistency because Cronbach's α assumes that all items measuring the same construct are equally weighted (Hair et al., 2010). Thus, within CFA, it is plausible to measure internal consistency using composite reliability (CR) in conjunction with Cronbach's α . This is because CR takes into consideration that items measuring the same construct may have different weight on this construct (Hair et al., 2010).

The accepted standard of Cronbach's alpha is > 0.70 or above with a Cronbach's Alpha > 0.90 indicating high reliability (MacKenzie et al., 2011). Likewise, a value of composite reliability exceeding the recommended level of 0.7 indicates that items of a construct have satisfactory internal consistency. A summarised guideline for assessing the validity and reliability of a reflective measurement model is listed in Table 4.5.

Table 4.5. Recommended Thresholds for Validity and Reliability Tests

		Recommended threshold
Construct validity	Discriminant validity	The square root of the AVE of a construct should be larger than the correlations between this construct and other constructs (Gefen et al., 2011)
	Convergent validity	AVE ≥ 0.5 (MacKenzie et al., 2011) Each item's loading on its underlying construct should be greater than 0.7 at a significance level of 0.05 (Hair et al., 2010)
Construct reliability	Internal consistency	Cronbach's alpha ≥ 0.7 (MacKenzie et al., 2011) Composite reliability ≥ 0.7 (MacKenzie et al., 2011)

4.7.5 Validating the Structural Model

Following a two-step SEM data analytic approach to test the validity of the measurement model in front, this study subsequently tested the structural model which was built upon the valid measurement model. Similar to the validation of a measurement model, validating the structural model also involves the examination of the extent to which the hypothesised model fits the data, the path coefficients between independent variables and dependent variables, and the variance in dependent variable explained by independent variable(s) (Gefen et al., 2000).

Model Fit

The concept of the structural model fit is similar to that of the measurement model. Hence, this study used the fit indices listed in Table 4.4 (i.e., χ^2/df , RMSEA, CFI, and PCFI) to assess the overall fit of the structural model. Details of the chosen fit indices are discussed in Section 4.7.4. Generally speaking, a cut-off value smaller than 5 for χ^2/df and close to 0.8 for RMSEA, 0.90 for CFI and PCFI, is indicative of a good fitting structural model, which can be interpreted as evidence of enough validity for the hypothesised model (MacKenzie et al., 2011).

Testing the Hypothesised Relationships

Similar to the validation of a measurement model, the validation of the structural model validity is not complete based only on model fit without examining the loading of each item on the underlying construct. Hence, testing of the individual parameter estimates of hypothesised relationships between constructs is another essential step for validating the structural model (Hair et al., 2010). The evaluation of structural parameter estimates focuses on issues of the size, direction, and significance of the structural parameter estimates (Hair et al., 2010). The parameter estimate, together with magnitude and significance level, indicates the strength of the relationship between two constructs. According to Cohen (1990), the standardised parameter estimation should exceed 0.148 and ideally be above 0.371, at least at the significance level of 0.05, in order to draw the conclusion that the hypothesised paths included in the structural model are meaningfully valid.

Variance Explained

In addition to assessing model fit and path coefficient, the validity of a structural model requires additional evidence. Similar to using the variance extracted to assess construct validity in a measurement model, the variance of a dependent variable explained by related independent variables is another important criterion for assessing the structural model (Hair et al., 2010).

In SEM, the dependent variable's coefficient of determination (R^2) measures the percentage of its variance explained by the independent variables specified in the structural model. Generally, a value of R^2 above 0.19 indicates that the independent variable(s) should be considered to account for the variance in the dependent variable (Chin, 1998b) and that the structural model is valid in predicting the changes in dependent variable using the independent variables.

Testing the Moderation Effect

As discussed in Chapter 3, knowledge self-efficacy is hypothesised to have a moderating effect on the relationship between autonomous motivation and intention and the relationship between controlled motivation and intention. In this study, a multi-group analysis was employed to examine the hypothesised moderation effect (Bigné-Alcañiz et al., 2009). Moderation can be assessed in two ways (Meyers et al., 2013). First, the unconstrained model is compared to a constrained model in terms of their overall fits and the χ^2 difference test. Second, the differences in the path coefficients representing the relationship between autonomous motivation and intention and the relationship between controlled motivation and intention is compared between high and low knowledge self-efficacy. Standardised estimates are usually used along with pairwise parameter comparisons to determine whether the differences between high and low knowledge self-efficacy are significant.

A summary of the tests involved in data analyses for this study is shown in Table 4.6.

Table 4.6. Data Analysis Summary

Analysis type	Method	Source
<u>Data screening</u>		
Missing data	<ul style="list-style-type: none"> • Web survey system • Frequency test 	Karanja et al. (2013) Meyers et al. (2013)
Univariate outliers	<ul style="list-style-type: none"> • Boxplots 	Hair et al. (2010) Gao et al. (2008)
Multivariate outliers	<ul style="list-style-type: none"> • Mahalanobis Distance 	Hair et al. (2010) Gao et al. (2008)
Univariate normality	<ul style="list-style-type: none"> • Skewness • Kurtosis • Shapiro-Wilk statistic 	Meyers et al. (2013) Hair et al. (2010) Pallant (2010)
Homoscedasticity	<ul style="list-style-type: none"> • Residual scatterplots 	Hair et al. (2010) Pallant (2010)
Linearity	<ul style="list-style-type: none"> • Simple regression 	Hair et al. (2010) Pallant (2010)

Analysis type	Method	Source
<u>Testing the measurement model</u>		
Model fit	<ul style="list-style-type: none"> • Absolute fit indices • Incremental fit indices • Parsimony fit indices 	Bagozzi and Yi (2012) Gefen et al. (2011) MacKenzie et al. (2011) Hair et al. (2010) Hooper et al. (2008) Kim (2005)
Content validity	<ul style="list-style-type: none"> • Literature reviews • Expert reviews 	Straub et al. (2004) Sekaran (2010)
Convergent validity	<ul style="list-style-type: none"> • Indicator loadings • Average Variance Extracted (AVE) 	Gefen et al. (2011) MacKenzie et al. (2011) Hair et al. (2010)
Discriminant validity	<ul style="list-style-type: none"> • Correlation vs. squared AVE 	Gefen et al. (2011) MacKenzie et al. (2011) Hair et al. (2010)
Construct reliability	<ul style="list-style-type: none"> • Cronbach's Alpha • Composite Reliability 	MacKenzie et al. (2011) Hair et al. (2010)
External validity	<ul style="list-style-type: none"> • Survey research 	Creswell (2009)
Multicollinearity	<ul style="list-style-type: none"> • Variance Inflation Factor • Tolerance value 	Hair et al. (2010) Sekaran (2010) Grewal et al. (2004)
<u>Testing the structural model</u>		
Model fit	<ul style="list-style-type: none"> • Absolute fit indices • Incremental fit indices • Parsimony fit indices 	Bagozzi and Yi (2012) Gefen et al. (2011) MacKenzie et al. (2011) Hair et al. (2010) Hooper et al. (2008) Kim (2005)
Path coefficient	<ul style="list-style-type: none"> • Sign • Standardised regression weight • Critical ratio • P Value 	Hair et al. (2010) Cohen (1990)
Variance explained	<ul style="list-style-type: none"> • R2 of dependent variable 	Hair et al. (2010) Chin (1998b)
Moderation effect	<ul style="list-style-type: none"> • Multigroup analysis • Chi-square difference • Z-test 	Meyers et al. (2013) Hair et al. (2010) Bigné-Alcañiz et al. (2009)

4.8 Summary of Chapter Four

This chapter presented the methodologies used in this study. To fulfil the research objective and to answer the research questions, this study follows a positivist paradigm which suggests that a survey research is an appropriate research method. Next, the process of developing a survey instrument was described. The procedures of using a web-based survey, the sampling technique and ethical considerations for collecting empirical data were also discussed.

CBSEM was chosen as the main data analytical technique to achieve the research objective. The specification and evaluation of the measurement model were discussed along with considerations of its validity and reliability. The procedures of assessing the structural model were also discussed in this chapter. The results of analysing the empirical data using AMOS and corresponding findings will be presented in Chapter Five and Chapter Six, respectively.

CHAPTER Five: Data Analysis and Results

5.1 Chapter Overview

This chapter presents the procedures and results of analysing the empirical data collected through the web-based survey. The data analysis phase followed the analytical approach using SEM as proposed by Hair et al. (2010). First, the raw data gathered from the survey instrument, as described in the previous chapter, went through a screening procedure to ensure its eligibility for further data analyses. Second, using the screened data, the measurement model specified in Section 4.7.3 was assessed in terms of its validity and reliability. Third, a structural model, which was built upon the valid measurement model, was evaluated to test the hypothesised relationships between variables. Figure 5.1 illustrates the logical flow presented in the methodology chapter.

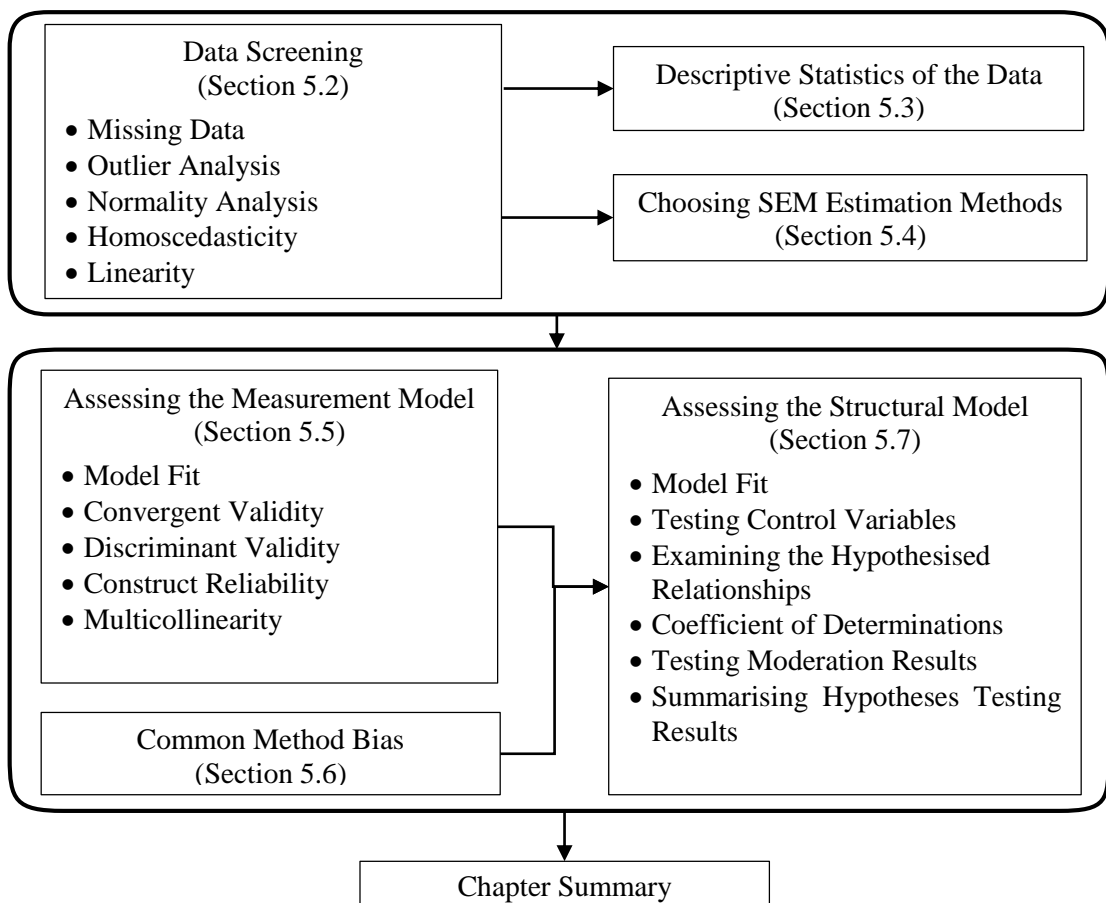


Figure 5.1. An overview of Chapter Five

5.2 Data Screening

Prior to conducting any analysis using CBSEM, a thorough screening of the raw data collected from the survey was performed by following the procedures recommended by Hair et al. (2010). The data screening included an examination of missing data, univariate and multivariate outlier analyses, and testing the assumptions of multivariate analysis. This study examined the assumptions of normality, linearity, and homoscedasticity because they are of significance to multivariate analyses such as CBSEM in the sense that violation of one or more of these assumptions could result in biased statistical results (Hair et al., 2010). All the statistical tests for data screening were completed using SPSS statistical software version 20. Details of the data screening are described in this section.

5.2.1 Missing Data

This study used a web survey service to collect empirical data, which helped prevent the occurrence of missing values in the dataset. It was made compulsory for participants to answer questions for all the items. In addition, in practice, the web survey system automatically checks for incomplete responses and accepts only responses that are complete. The responses were also automatically stored and saved in a database as participants completed the questionnaire. The database containing participants' responses was then directly downloaded and imported to SPSS Version 20 when data collection was completed. This automatic data entry process minimised data entry errors.

Thus, the data downloaded from the web survey system should contain no missing data. To statistically ensure the completeness of all responses, the examination of frequencies for each item was checked in SPSS in order to detect any missing data after the data were imported to SPSS. The results of the frequency test using the responses from 274 participants showed that there was no missing data in the dataset.

5.2.2 Outlier Analysis

To detect univariate outliers, boxplots were used to graphically present cases with extreme values. These boxplots indicated that there was a small number of univariate outliers for some indicators. Overall, a total of 23 unique cases with univariate outliers

were identified, representing 8.39% of the 274 cases. On an individual indicator level, no indicator included more than 1.82% of all cases with univariate outliers. A summary of the cases determined to contain potential univariate outliers is presented in Table 5.1.

Multivariate outliers are observations with extreme or unusual values on a combination of all the indicators (Hair et al., 2010). The Mahalanobis D^2 measure is recommended for detecting multivariate outliers. The Mahalanobis D^2 divided by the number of indicators involved (D^2/df) provides an overall assessment of each observation regardless of how many indicators are included. Hair et al. (2010) suggest that a value of an observation's D^2/df that exceeds 2.5 for a small sample size (i.e., 100) and 3 or 4 for a larger sample size indicates a possible multivariate outlier. Because the sample of this study had 274 observations, to be conservative, a threshold value of 3 was used.

For this study, a simple linear regression was conducted to calculate the Mahalanobis D^2 using an observation identification number as the dependent variable and all indicators as the independent variables. Then, the Mahalanobis D^2 was divided by the total number of indicators (i.e., 36) to calculate a D^2/df value for each observation. Two observations, observation number 154 and 221, yielded D^2/df values of 3.920 and 5.052, respectively, which were above the threshold value of 3. Thus, observation number 154 and 221 were identified as multivariate outliers.

In total, the outlier analysis identified 23 unique observations with potential univariate and/or multivariate outliers. Once outliers have been identified, the decision needs to be made regarding the deletion or retention of the observations with outlier issues. Hair et al. (2010) note four sources of outliers: (1) data entry and coding errors, (2) extraordinary events, (3) no explanation, and (4) the existence of multivariate outliers. For this study, there were no data entry and coding errors as they were fully controlled through the web survey service system. In addition, there was no reason to suspect any extraordinary events that could account for the extreme departure of the outlier values, and, therefore, the second source of outliers did not apply to this dataset. Therefore, the presence of outliers in this dataset either had no explanation or there were multivariate outlier issues.

The fact that observation numbers 154 and 221 also appeared frequently in the list of univariate outliers for a number of indicators could explain the outliers in the dataset. In other words, they were unique outliers not only in any single indicator, but also in a combination of all indicators. Therefore, observation number 154 and 221 were removed from the original dataset. In addition, even if the outliers are unexplainable, they usually

can be deleted (Meyers et al., 2013). The removed observations represented only 0.73% of all observations, which could be considered an acceptable amount. Hence, there were 272 observations left in the sample for further data analyses.

Table 5.1. Univariate Outliers Summary

Indicator	Observation number of the outlier	Number of outliers	Number of new outliers	% of observations with outliers
REC1	221	1	0	0.36%
REC2	154, 221	2	0	0.73%
REC3	125, 194, 220, 221	4	2	1.46%
REC4	221	1	0	0.36%
REP1	166, 176, 241	3	3	1.09%
REP2	118, 154, 220, 221	4	0	1.46%
REP3	106, 179	2	2	0.73%
REP4	106, 164, 220, 221	4	0	1.46%
TIP1	148, 202	2	2	0.73%
TIP2	6, 8, 148, 166, 221	5	4	1.82%
TIP3	6, 154	2	1	0.73%
TIP4	154	1	0	0.36%
TIUE1	221	1	0	0.36%
TIUE2	221	1	0	0.36%
TIUE3	154	1	0	0.36%
TIUE4	none	0	0	0.00%
ACC1	221	1	0	0.36%
ACC2	164, 183, 221	3	2	1.09%
ACC3	183	1	0	0.36%
ACC4	154, 164, 183, 221	4	0	1.46%
ACC5	154, 164, 183, 220, 221	5	1	1.82%
NCC1	49, 118, 128, 268	4	4	1.46%
NCC2	128, 221, 268	3	0	1.09%
NCC3	49, 118, 268	3	0	1.09%
NCC4	49, 128, 154, 221, 268	5	0	1.82%
AM1	220	1	0	0.36%
AM2	154, 220	2	0	0.73%
AM3	154	1	0	0.36%
AM4	46, 154, 220, 221	4	1	1.46%
CM1	none	0	0	0.00%
CM2	none	0	0	0.00%
CM3	none	0	0	0.00%
CM4	none	0	0	0.00%
INT1	none	0	0	0.00%
INT2	46, 154, 214, 220, 221	5	1	1.82%
INT3	220, 221	2	0	0.73%
		Total	23	8.39%

5.2.3 Normality Analysis

This section describes the examination of univariate normality. While univariate normality for a single indicator is easy to test, evaluating multivariate normality is sometimes difficult (Hair et al., 2010). Although a situation in which all indicators have univariate normality does not guarantee multivariate normality of a set of all indicators, it helps gain multivariate normality. In addition, in most cases, assessing univariate normality for all indicators is sufficient at the data screening stage where the multivariate normality issue is not especially critical (Hair et al., 2010). Besides, recent development in CBSEM software packages makes it possible for CBSEM to handle a dataset with non-normal indicators. Hence, for this study, multivariate normality was tested in-between data examination and model assessment using AMOS version 20. The details are described in Section 5.4 along with discussion on the approaches that can handle non-normal data.

The examination of univariate normality was completed through a number of tests, including statistical tests for skewness, kurtosis, and the Shapiro-Wilk test, as well as a graphical approach of examining histogram and normal probability plots (Meyers et al., 2013). The skewness and kurtosis values for each of the indicators were calculated in SPSS and are displayed in Table 5.2. Different rule-of-thumbs were employed to interpret these values. First, all of the indicators had skewness and kurtosis values within a common threshold value of ± 1.0 (Meyers et al., 2013), suggesting that none of the indicators had skewness or kurtosis issues. Second, following Hair et al.'s (2010) suggestion, z-scores for skewness and kurtosis values were calculated in SPSS and compared to a strict critical value of 2.58 (at the significance level of .01). The analysis results showed that nine indicators (in grey cells in Table 5.2) may have had non-normality characteristics with respect to skewness while none of the indicators exhibited kurtosis issues. In summary, there were possible skewness issues with some of the indicators, but no kurtosis issues with any of the indicators.

Table 5.2. Summary of Normality Test

	Mean	Median	Mode	Skewness	Z score	Kurtosis	Z score	Shapiro- Wilk statistic	Sig.
REC1	5.86	6.00	6	-.346	-2.340	.019	0.063	.831	.000
REC2	5.90	6.00	6	-.359	-2.429	-.351	-1.193	.852	.000
REC3	6.02	6.00	6	-.444	-3.004	-.319	-1.083	.839	.000
REC4	5.93	6.00	6	-.325	-2.202	-.299	-1.017	.843	.000
REP1	5.42	6.00	6	-.215	-1.453	-.575	-1.952	.893	.000
REP2	5.64	6.00	6	-.279	-1.886	-.597	-2.027	.887	.000
REP3	5.69	6.00	6	-.323	-2.185	-.250	-0.850	.878	.000
REP4	5.64	6.00	6	-.339	-2.294	-.088	-0.298	.879	.000
TIP1	5.61	6.00	6	-.528	-3.574	.381	1.295	.839	.000
TIP2	5.56	6.00	6	-.514	-3.482	-.037	-0.127	.867	.000
TIP3	5.64	6.00	6	-.326	-2.209	.183	0.621	.842	.000
TIP4	5.65	6.00	6	-.552	-3.738	.165	0.562	.806	.000
TIUE1	5.65	6.00	6	-.276	-1.866	-.160	-0.544	.842	.000
TIUE2	5.61	6.00	6	-.001	-.004	-.325	-1.104	.844	.000
TIUE3	5.82	6.00	6	-.369	-2.495	-.143	-0.487	.846	.000
TIUE4	5.92	6.00	6	-.165	-1.114	-.622	-2.112	.843	.000
ACC1	5.67	6.00	6	-.342	-2.312	-.287	-0.974	.853	.000
ACC2	5.51	6.00	6	-.148	-1.002	-.327	-1.111	.883	.000
ACC3	5.58	6.00	6	-.272	-1.843	-.440	-1.496	.875	.000
ACC4	5.45	5.00	5	-.084	-.572	-.411	-1.395	.891	.000
ACC5	5.59	6.00	6	-.288	-1.952	-.338	-1.148	.887	.000
NCC1	5.49	6.00	6	-.466	-3.154	-.089	-0.304	.874	.000
NCC2	5.19	5.00	5	.261	1.770	-.426	-1.446	.880	.000
NCC3	5.39	5.00	5	-.200	-1.352	-.318	-1.080	.894	.000
NCC4	5.43	5.00	5	-.157	-1.062	-.463	-1.573	.899	.000
AM1	5.79	6.00	6	-.624	-4.228	.611	2.076	.823	.000
AM2	5.80	6.00	6	-.435	-2.946	-.143	-0.485	.863	.000
AM3	5.72	6.00	6	-.337	-2.285	-.570	-1.935	.866	.000
AM4	5.75	6.00	6	-.436	-2.954	-.163	-0.555	.873	.000
CM1	4.37	4.00	5	-.010	-.068	-.650	-2.207	.943	.000
CM2	4.47	5.00	5	-.188	-1.273	-.621	-2.108	.940	.000
CM3	4.97	5.00	5	-.366	-2.478	-.111	-0.375	.930	.000
CM4	4.76	5.00	5	-.360	-2.440	-.374	-1.270	.927	.000
INT1	5.74	6.00	6	-.170	-1.148	-.466	-1.583	.861	.000
INT2	5.74	6.00	6	-.577	-3.904	.340	1.156	.865	.000
INT3	5.82	6.00	6	-.332	-2.248	-.163	-0.554	.862	.000

In addition to examining skewness and kurtosis, the Shapiro-Wilk test was used to further detect any normality issues in the dataset. Compared to the Kolmogorov-Smirnov test which is usually recommended for testing univariate normality when a sample size is larger than 2,000, the Shapiro-Wilk test for normality is more suitable for research with a smaller sample size (Hair et al., 2010). The results of the Shapiro-Wilk test are also displayed in Table 5.2. One guideline for assessing possible violations of univariate normality using the Shapiro-Wilk test is that a significance level smaller than .001 indicates possible normality issues. In this study, all indicators appeared to have normality concerns as the significance levels of the Shapiro-Wilk test were all smaller than .001.

To complement the above statistical tests, the histogram was inspected through a graphical method. The need for the inspection of the histogram was partly due to the suspicion that the Shapiro-Wilk results may have been associated with skewness issues (Field, 2013). A visual examination of univariate normality such as histograms plots is usually suggested for data normality in a sample size greater than 200 (Tabachnick & Fidell, 2013). The histogram shape for each indicator appeared to have a normal distribution curve overlaid, indicating a distribution with a sufficient level of normality (Pallant, 2010).

In summary, while there were potential normality issues in the dataset, the statistical and graphical examination of univariate normality indicated that departures from normality were within an acceptable level. In addition, Hair et al. (2010) state that a sample size greater than 200 may diminish the effects of non-normality on the results of statistical analyses using a dataset with non-normal indicators (Gefen et al., 2011). Hence, the dataset with 272 observations was considered suitable for conducting further statistical analyses.

5.2.4 Homoscedasticity

To test the statistical assumption of homoscedasticity for conducting CBSEM, a residual scatterplot was generated for each indicator to provide graphical evidence of the presence of homoscedasticity (Hair et al., 2010). In a residual scatterplot, residual Y values are presented along the Y-axis and predicted Y values along the X-axis. A flat line that intersects the Y-axis at zero in a residual scatterplot can be interpreted as strong evidence of the existence of homoscedasticity (Pallant, 2010). The results of testing

homoscedasticity using residual scatterplots in this study showed that there was no violation of the homoscedasticity assumption. Thus, the dataset was considered suitable for conducting further analyses.

5.2.5 Linearity

A simple regression was completed to test linearity using the indicators of each dependent variable as a dependent variable and all indicators of every independent variable as an independent variable. According to Pallant (2010), a significance value for linearity smaller than 0.05 suggests that there is a linear relationship. The results of the linearity test indicated the existence of the linearity of all relationships of interest to this study.

In summary, after checking for missing data and outliers (both univariate and multivariate), 272 observations were deemed to be suitable for conducting statistical analysis. Examinations of the statistical assumptions of multivariate analysis revealed the presence of satisfactory homoscedasticity and linearity and the absence of serious univariate normality issues. Although normality could have been a concern, it was handled by employing a bootstrapping technique in the CBSEM, which is explained in detail in Section 5.4.

5.3 Descriptive Statistic

Along with participants' responses to the items measuring each construct in the research model, their general demographic information was also collected. The demographic information included gender, age, education, occupation, work experience, position, and industry. The descriptive statistics of participants' demographics are presented in Table 5.3.

Table 5.3 indicates that of the 272 respondents, there were more females than males with over 61% female respondents and fewer than 39% male respondents. The majority of respondents were aged between 26 and 30, accounting for 43.4% of the respondents, followed by those aged between 31 and 35 at 26.8%. In terms of the education background of the participants, nearly 98% of them held a minimum of a Bachelor's Degree. Over 80% of the participants had worked for 10 years or below, whereas less than 8% had

worked for more than 15 years. As shown in Table 5.4, in terms of their experience of using professional online communities, nearly 90% reported that they had visited professional online communities at the office and more than 88% at home. In addition, over 86% of participants stated that they had learnt problem-solving skills from professional online communities and more than 67% had learnt interpersonal skills.

Table 5.3. Survey Participants' Demographic Information

Demographic information		Number	Percentage
Gender	Male	105	38.6%
	Female	167	61.4%
Age	21-25	41	15.1%
	26-30	118	43.4%
	31-35	73	26.8%
	36-40	18	6.6%
	41-45	13	4.8%
	46-50	4	1.5%
	51 or above	5	1.8%
Education	Below high school	2	0.7%
	High school	4	1.5%
	Bachelor's	239	87.9%
	Master's or above	27	9.9%
Work Experience	5 years or below	89	32.7%
	6-10 years	130	47.8%
	11-15 years	32	11.8%
	16-20 years	8	2.9%
	21-25 years	9	3.3%
	26-30 years	2	0.7%
	31 years or above	2	0.7%

Table 5.4. Professional Online Communities Usage

		Number	Percentage
Place to visit POC	Office	244	89.71%
	Home	240	88.24%
Skills learnt from POC	Interpersonal skills	183	67.28%
	Problem-solving skills	234	86.03%
	Managerial skills	132	48.53%
	Resource management skills	146	53.68%

5.4 Estimation Methods

One of the most commonly used estimation methods in CBSEM is the maximum likelihood estimation which assumes multivariate normality of the data. This is partly because using the maximum likelihood estimation method for assessing a structural model is able to reduce the effect of measurement error on the results (Rönkkö & Evermann, 2013).

However, as mentioned in Section 5.2.3, there were some indicators in the current dataset with moderate departure from univariate normality. Caution needs to be taken when using a dataset for multivariate analyses, even though non-normality is not a serious issue. Thus, a multivariate normality assessment was conducted using AMOS version 20. The testing results showed that the multivariate kurtosis value was 137.057 with a critical ratio of 21.607. These results indicated that the assumption multivariate normality was not met.

To deal with data displaying multivariate non-normality, a bootstrap re-sampling technique was employed in this study (Gefen et al., 2011). Bootstrapping is a statistical re-sampling procedure based on the original sample obtained which is considered to be representative of the population (Byrne, 2010). Bootstrapping is able to handle non-normal distributed data and to give less biased estimates (Ringle et al., 2012).

AMOS version 20 provides several options in terms of bootstrap estimators. For this study, the researcher requested AMOS to perform a Bollen–Stine bootstrap on 1000 bootstrap samples with bias-corrected confidence intervals set at the recommended level of 95%. Compared to other bootstrap estimators, such as the Bootstrap Maximum Likelihood, the Bollen-Stine bootstrap was chosen for its ability to test the adequacy of the specified model based on a transformation of the original sample data (Byrne, 2010).

5.5 Measurement Model Assessment

The research model was a reflective one, including nine reflective constructs. For reflective measurement model evaluation, this study followed the procedures recommended by Straub et al. (2004). CFA was used to evaluate the measurement model by assessing the validity and reliability of the measurement model using the following

analyses: measurement model fit, content validity, convergent validity, discriminant validity, and internal consistency. The results of these analyses are presented in this section.

5.5.1 Model Fit

As a first step, the CFA model fit indices were examined. The results indicated that the measurement model had an adequate model fit: $\chi^2/df = 1.625$, Comparative Fit Index (CFI) = 0.955, Goodness-of-Fit Index (GFI) = 0.826, Root Mean Square Error of Approximation (RMSEA) = 0.048.

5.5.2 Convergent Validity

Following Hair et al.'s (2010) suggestions, convergent validity was tested in two ways. First, the factor loadings of measurement items on their underlying constructs needed to be at the minimum threshold of 0.70 and at the significance level of 0.05. As shown in Table 5.5, loadings of all indicators on their corresponding variables were above 0.70. All the indicator loadings were significant at the significance level of 0.001. Thus, the requirement of convergent validity was met. Second, the values of the average variance extracted (AVE) for every variable needed to exceed 0.50. All the AVEs, as presented in Table 5.5, ranged from 0.643 to 0.787, which exceeded the recommended 0.50 threshold and thus provided evidence of satisfactory convergent validity.

5.5.3 Discriminant Validity

Discriminant validity was assessed by following Gefen et al.'s (2011) recommendation, which is that the square root of the AVE for each construct should be greater than the correlations between this construct and all other constructs. In Table 5.6, the square roots of the AVEs are presented in shaded cells in the diagnosis. The correlations among constructs are shown in off-diagonal cells. The square root of the AVE of each construct was greater than its correlations with other constructs, confirming satisfactory discriminant validity.

Table 5.5. Convergent Validity

Construct	Item	Factor loading	Mean	Standard deviation
Reciprocity (REC) (AVE=0.701)	REC1	0.822	5.86	0.734
	REC2	0.822	5.90	0.808
	REC3	0.859	6.02	0.792
	REC4	0.845	5.92	0.767
Online reputation (REP) (AVE=0.642)	REP1	0.783	5.42	0.953
	REP2	0.790	5.64	0.951
	REP3	0.790	5.69	0.881
	REP4	0.840	5.44	0.835
Trust in peers (TIP) (AVE=0.727)	TIP1	0.863	5.61	0.775
	TIP2	0.848	5.56	0.891
	TIP3	0.867	5.64	0.746
	TIP4	0.832	5.65	0.723
Trust in the user evaluation mechanism (TIUE) (AVE=0.715)	TIUE1	0.853	5.65	0.753
	TIUE2	0.877	5.61	0.741
	TIUE3	0.835	5.82	0.783
	TIUE4	0.817	5.43	0.958
Affective community commitment (ACC) (AVE=0.721)	ACC1	0.834	5.67	0.810
	ACC2	0.841	5.51	0.867
	ACC3	0.836	5.58	0.873
	ACC4	0.883	5.45	0.908
	ACC5	0.852	5.59	0.917
Normative community commitment (NCC) (AVE=0.741)	NCC1	0.869	5.49	0.901
	NCC2	0.792	5.19	0.887
	NCC3	0.885	5.39	0.919
	NCC4	0.893	5.93	0.770
Autonomous motivation (AM) (AVE=0.697)	AM1	0.866	5.79	0.763
	AM2	0.811	5.80	0.850
	AM3	0.795	5.72	0.890
	AM4	0.864	5.75	0.888
Controlled motivation (CM) (AVE=0.787)	CM1	0.929	4.37	1.349
	CM2	0.892	4.47	1.344
	CM3	0.847	4.97	1.222
	CM4	0.879	5.64	0.878
Intention (INT) (AVE=0.768)	INT1	0.858	5.74	0.807
	INT2	0.865	5.74	0.878
	INT3	0.906	5.82	0.821

Table 5.6. Discriminant Validity

	AVE	REC	REP	TIP	TIUE	ACC	NCC	AM	CM	INT
REC	0.701	0.837								
REP	0.642	0.714	0.801							
TIP	0.727	0.574	0.536	0.853						
TIUE	0.715	0.705	0.668	0.726	0.846					
ACC	0.721	0.725	0.759	0.65	0.761	0.849				
NCC	0.741	0.592	0.716	0.566	0.666	0.823	0.861			
AM	0.697	0.692	0.733	0.62	0.743	0.821	0.764	0.835		
CM	0.787	0.308	0.494	0.353	0.43	0.479	0.572	0.48	0.887	
INT	0.768	0.727	0.689	0.541	0.686	0.748	0.678	0.821	0.352	0.877

Table 5.7. Construct Reliability

	Cronbach's Alpha	Composite reliability
REC	0.902	0.904
REP	0.875	0.877
TIP	0.912	0.914
TIUE	0.909	0.909
ACC	0.928	0.928
NCC	0.919	0.919
AM	0.900	0.902
CM	0.936	0.937
INT	0.907	0.909

5.5.4 Construct Reliability

As discussed in Chapter 4, construct reliability can be assessed using the internal consistency measure presented by Cronbach's α and composite reliability (CR). Construct reliability is evidenced when both the Cronbach's α and the composite reliability measure are greater than 0.70. Table 5.7 shows that Cronbach's α for all constructs except for REP (Cronbach's $\alpha = 0.875$) were above 0.900. In addition, values of CR for all constructs ranged from 0.877 to 0.937, highly exceeding the recommended level of 0.70. Thus, the results of testing internal consistency showed that the indicators used to represent each variable had high construct reliability.

In summary, validating the measurement model yielded satisfactory model fit and adequate construct validity and reliability. The measurement model could therefore be used to proceed to the next step of CBSEM, namely testing the structural model. However, as also shown in Table 5.5, the correlations between every two constructs were above 0.6. This implied that multicollinearity might have been an issue in the dataset (Grewal et al., 2004). Thus, prior to proceeding to other tests, statistical analyses were conducted to detect any multicollinearity issues.

5.5.5 Multicollinearity

Multicollinearity is defined as the extent to which a variable can be explained through the other variables in the analysis. “As multicollinearity increases, it complicates the interpretation of the variate in a dependent variable because it is more difficult to ascertain the effect of any single variable, owing to their interrelationships” (Hair et al., 2010, p. 2). To detect multicollinearity, the examination of the Variance Inflation Factor (VIF) and the tolerance value of each indicator are suggested (Grewal et al., 2004). According to Sekaran (2010), a VIF greater than 10 or a tolerance value less than 0.1 may indicate multicollinearity.

A series of simple linear regression analyses were conducted using SPSS to produce VIF and a tolerance value for each indicator. In the regression analysis, each indicator was used as the dependent variable with all of the remaining indicators as the independent variables. The results showed that all the VIFs were below the recommended threshold of 10, with the highest value of 6.146 and 97.63% below 5. In addition, all the tolerance values exceeded 0.1, with the lowest value of 0.163. Hence, no multicollinearity was detected in the dataset.

5.6 Common Method Bias

Noting that the dataset used for statistical analyses in this study was collected using a single web-based survey and that the self-reported answers related to each construct were conceptual, testing for common method bias was a highly recommended technique (Straub et al., 2004). Common method bias (also known as common method variance) can result in a significant effect in the structural model testing results when in fact the

true effect is because of the method used (Gefen et al., 2011). Thus, this study followed the procedural remedies and statistical remedies recommended by Podsakoff et al. (2012) to control any possible common method bias.

Procedural remedies refer to the efforts which are taken during data collection. First, questions were placed in proper sequence in the questionnaire. Specifically, questions relating to constructs of interest to this study were asked prior to questions regarding participants' demographics. Second, respondents were assured of the anonymity of their participation before they took part in the survey because protecting respondents' anonymity is one method of controlling common method bias (Podsakoff et al., 2003).

In addition to procedural remedies, different statistical approaches were employed to identify whether there was any common method bias in the dataset after the data collection was completed. A well-recognised statistical means of detecting common method bias is the Harman's single factor test. In this current test, a unrotated principal component factor analysis using SPSS was completed to examine the variance explained by a single factor (Podsakoff et al., 2003). According to Podsakoff et al. (2003), common method bias is present in the dataset when 1) a single factor emerges from the factor analysis or 2) one general factor accounting for a majority (no less than 50%) of the variance in all of the variables is included in the analysis. In this study, the result of the Harman's single factor test revealed seven factors emerging from the dataset with the first factor extracted accounting for 49.93% of the variance.

Overall, common method bias was not a serious issue in this study after applying procedural remedies during data collection, which was further evidenced using statistical methods during data analysis.

In sum, the evaluation of the measurement model yielded satisfactory model fit, validity, and reliability. The examinations of multicollinearity and common method bias further confirmed the validity of the measurement model. Hence, it was feasible to move to the next stage to evaluate the structural model.

5.7 Structural Model Validation

The validated measurement model was then changed into the structural model proposed in Chapter 3. The procedure for testing the structural model is similar to aforementioned procedures used to test the measurement model. Specifically, the assessment of a structural model includes the examination of the structural model fit, the relationship between latent variables (i.e., path coefficient) and the variance of dependent variables explained by independent variables (i.e. R^2 value). The results of the structural model testing are presented in this section.

5.7.1 Structural Model Evaluation

The specified structural model exhibited an acceptable fit: χ^2/df ($\chi^2 = 1515.466$, $df = 578$) = 2.622, RMSEA = 0.077, CFI = 0.891, PCFI = 0.817). χ^2/df was smaller than the recommended value of 3.000 and RMSEA was also within the 0.080 threshold. At the same time, CFI and PCFI were lower than the recommended threshold 0.90, but higher than 0.8, indicating a moderate model fit. It should be noted that when a combination of fit indices is used, it is acceptable that not all fit indices are within the thresholds when used individually (Bagozzi & Yi, 2012). Hence, the structural model moderately fit the data which was adequate for testing the hypothesised relationships between latent variables.

A review of the modification indices in the AMOS output related to the original model revealed no meaningful extraneous path among the variables. This means that no inclusion of additional parameters needed to be considered. However, in reviewing the parameter estimates for the original structural model, five parameters were non-significant. These parameters represented the paths from trust in peers to autonomous motivation (TIP \rightarrow AM; C.R. = 0.549), trust in peers to controlled motivation (TIP \rightarrow CM; C.R. = 0.105), trust in the user evaluation mechanism to controlled motivation (TIUE \rightarrow CM; C.R. = 1.162), affective community commitment to controlled motivation (ACC \rightarrow CM; C.R. = -0.342), and controlled motivation to intention (CM \rightarrow INT; C.R. = -1.403). Non-significant parameters suggested that the structural model could be respecified by removing the non-significant paths. However, considering the theory behind the path from controlled motivation to intention, this path remained in the structural model.

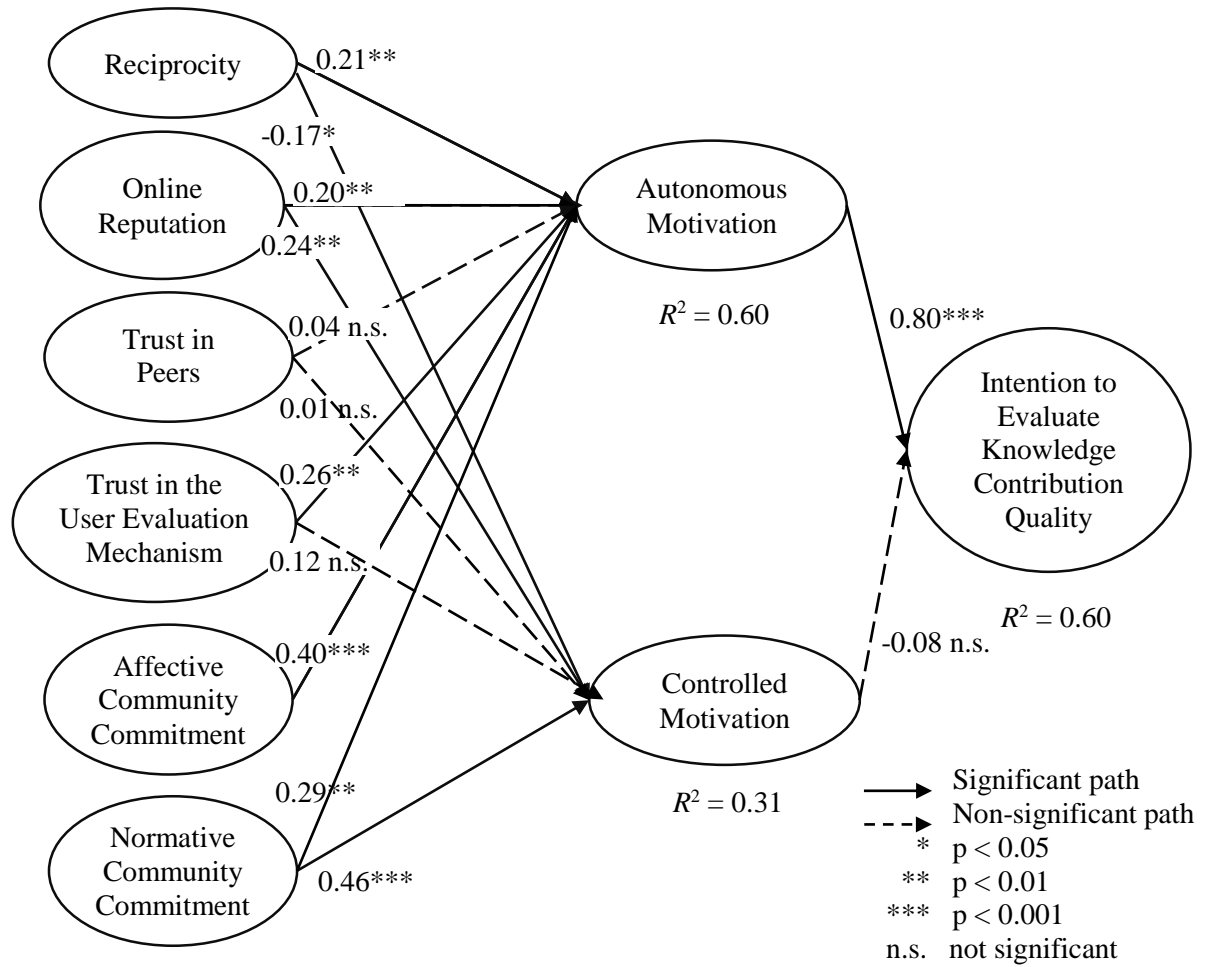


Figure 5.2. Results of the original structural model (i.e., Model 1)

The remaining non-significant paths with the lowest C.R.s (i.e., paths from TIP to CM and ACC to CM) were first deleted. Estimation of the respecified model resulted in the values of each fit index as follows: χ^2/df ($\chi^2 = 1515.589$, $df = 580$) = 2.613, RMSEA = 0.077, CFI = 0.891, PCFI = 0.820. The χ^2 difference between the two models was 0.112 ($\Delta df = 2$), suggesting that the difference was not significant. In addition, values of RMSEA and CFI remained unchanged while a minor increase was observed in the PCFI value. Hence, the respecified model (labelled as Model 2) represented a better fit to the data overall.

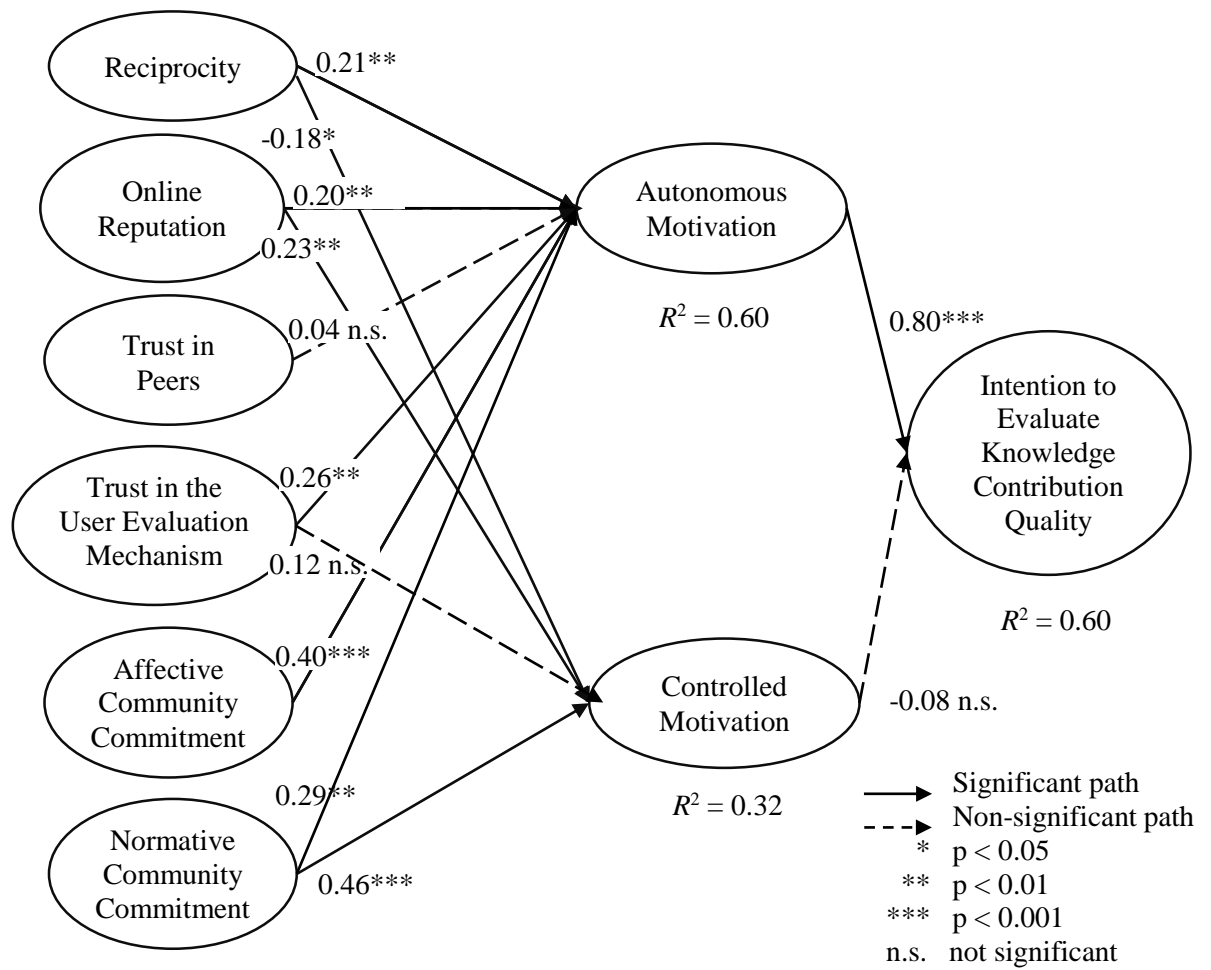


Figure 5.3. Results of testing the final respecified structural model (i.e., Model 2)

Table 5.8. Model Fit Indices for Original and Respecified Models

	χ^2/df	RMSEA	CFI	PCFI
Model 1: Original model	2.622	0.077	0.891	0.817
Model 2: Paths between TIP and CM and between ACC and CM deleted	2.613	0.077	0.891	0.820
Model 3: Paths between TIP and CM, between ACC and CM, and between TIP and AM deleted	2.894	0.084	0.887	0.809
Model 4: Paths between TIP and CM, between ACC and CM, and between TIUE and CM deleted	2.612	0.077	0.891	0.821

The next non-significant path from trust in peers to autonomous motivation was deleted from Model 2 and the new model was labelled as Model 3. As shown in

Table 5.8, the model fit indices for Model 3 were χ^2/df ($\chi^2 = 1308.305$, $df = 452$) = 2.894, RMSEA = 0.084, CFI = 0.887, and PCFI = 0.809. The χ^2 difference between Model 2 and Model 3 was 207.284 ($\Delta df = 128$), suggesting that the difference was not significant. Thus, the path from trust in peers to autonomous motivation was retained in the structural model.

Next, Model 2 was respecified by removing a path from trust in the user evaluation mechanism. This respecified model was labelled as Model 4. Estimation of Model 4 results in the values of each fit index as follows: χ^2/df ($\chi^2 = 1517.701$, $df = 581$) = 2.612, RMSEA = 0.077, CFI = 0.891, PCFI = 0.821). The χ^2 difference between the two models was 2.112 ($\Delta df = 1$), suggesting that the difference was not significant. Therefore, Model 2 was considered to be the final and the best fit to the data overall and was used for the remaining data analyses.

5.7.2 Testing Control Variables

To assess the impacts of the control variables (i.e., gender, age, education background, and work experience) on intention, the structural model with and without the inclusion of the control variables was compared. The results of testing the respecified structural model with the control variables included are presented in Figure 5.4.

With the inclusion of the control variables, the structural model yielded an acceptable fit: χ^2/df ($\chi^2 = 1966.838$, $df = 526$) = 2.709, RMSEA = 0.079, CFI = 0.860, PCFI = 0.801. As shown in Table 5.9, only age had a significant positive relationship with intention, indicating that as respondents ages increased, they reported higher scores for intention. The remaining three control variables (i.e., gender, education background, and work experience) had no significant relationships with intention. In addition, none of the hypothesised paths changed their algebraic signs or the significance levels of any of the paths.

A comparison of Figure 5.3 and Figure 5.4 shows that the variance in intention increased from 0.60 to 0.64 after the control variables were introduced to the structural model. This result indicated that most of the variance in intention was captured by the theoretical constructs and only a small portion (i.e., 4%) was due to the control variables. The small

difference in the variances in intention between the two models suggested that the control variables had only a minor effect on the hypothesised structural model. Therefore, the inclusion of the control variables was warranted as it ensured that these extraneous factors were accounted for in the research model while not significantly changing the impact of the theoretical constructs. Hence, the remaining discussion refers to Figure 5.4.

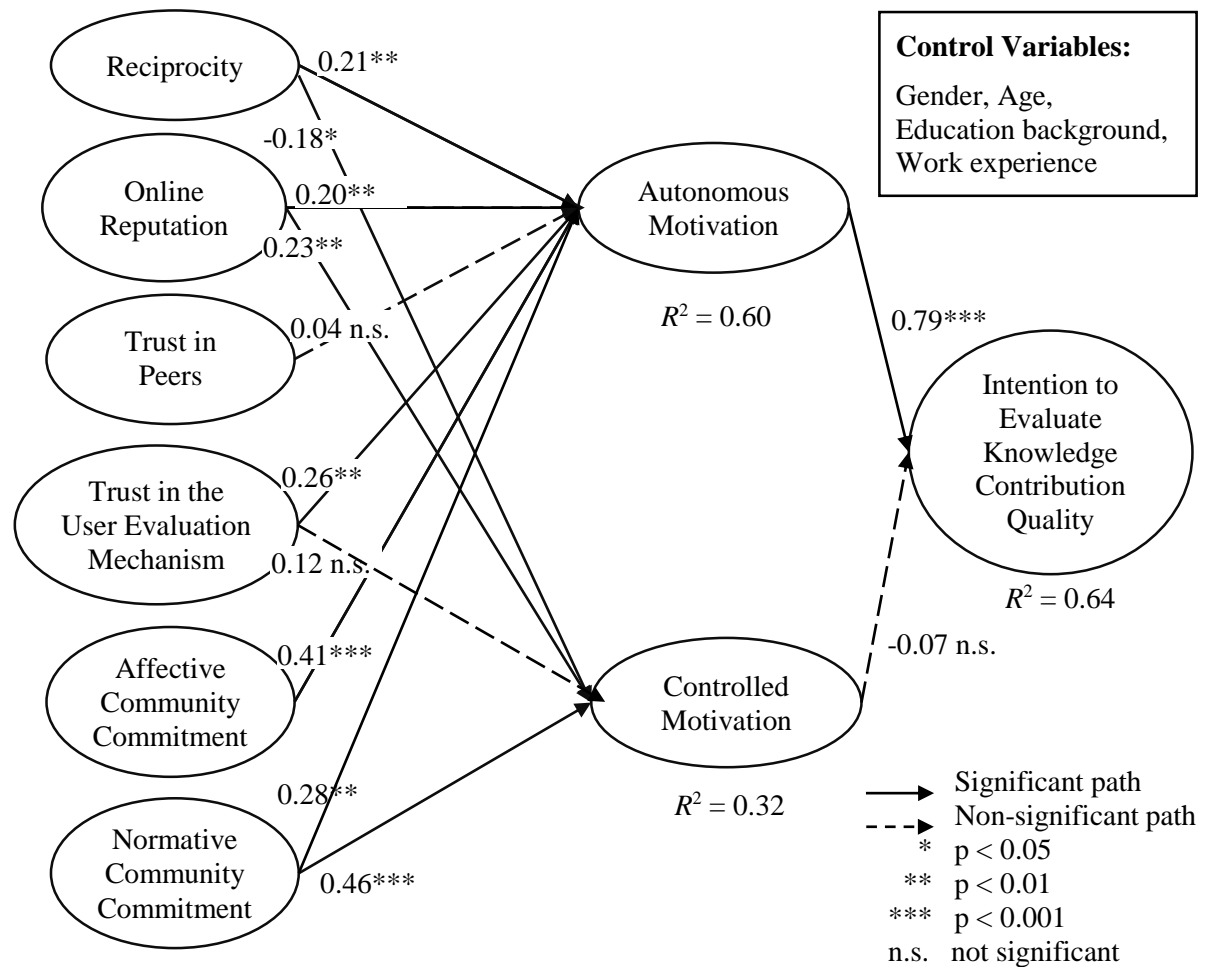


Figure 5.4. Structural model with control variables

Table 5.9. Structural Model Control Variable Analysis

	Path coefficient	Critical ratio	P value
Gender → Intention	0.04	1.338	0.181
Age → Intention	0.17	2.234	0.025
Education → Intention	0.04	0.803	0.422
Work experience → Intention	-0.08	-1.032	0.302

5.7.3 Examining the Hypothesised Relationships

To test the relationships between variables, the value of path coefficients in a structural model should be examined in terms of sign, magnitude, and significance. A path coefficient sign can be either positive or negative, indicating the direction of a relationship. A path magnitude indicates the coefficient between the independent variable and the dependent variable and is represented by the standardised path coefficient in AMOS output. Regarding the significance level of a relationship, the critical ratio and p value of a path coefficient show whether the relationship is significant and at what level (Hair et al., 2010).

Cohen (1990) classifies standardised parameter estimate into three categories: (1) 0.371 or above being classified as large, (2) between 0.148 and 0.371 as medium, and (3) below 0.148 as small. Therefore, a standardised path coefficient should exceed 0.148 and ideally be above 0.371, at least at the significance level of 0.05, in order to draw the conclusion that the hypothesised path included in the structural model is meaningful.

As Table 5.10 shows, all the path coefficients in Figure 5.4 were positive except two. The two negative paths were those from reciprocity to controlled motivation and controlled motivation to intention. In addition, the standardised path coefficients for three paths were above 0.371. These paths ranged from affective community commitment to autonomous motivation, normative community commitment to controlled motivation, and autonomous motivation to intention. Another three paths had standardised path coefficients lower than 0.148. These paths ranged from trust in peers to autonomous motivation, trust in the user evaluation mechanism to controlled motivation, and controlled motivation to intention. The standardised path coefficients for the remaining paths were between 0.148 and 0.371. Interestingly, the three paths whose coefficient estimates were below 0.148 were non-significant. However, the three paths whose coefficient estimates were above 0.371 were significant at the level of 0.001. The remaining paths were significant at the level of 0.01 except for the path from reciprocity to controlled motivation whose significance level was 0.05.

Therefore, based on Cohen (1990), there were three meaningless paths in the respecified structural model. These were the paths from trust in peers to autonomous motivation, trust in the user evaluation mechanism to controlled motivation, and controlled motivation to

intention. However, the rest of the paths as shown in Figure 5.4 were sufficiently meaningful to be included in the structural model.

Table 5.10. Path Estimations

Hypothesised path	Sign	Standardised path coefficient	Critical ratio	P value
Autonomous motivation → Intention	+	0.79	14.672	***
Controlled motivation → Intention	-	0.07	-1.193	<u>0.233</u>
Reciprocity → Autonomous motivation	+	0.21	2.894	0.004
Reciprocity → Controlled motivation	-	0.18	-2.152	0.031
Online reputation → Autonomous motivation	+	0.20	2.611	0.009
Online reputation → Controlled motivation	+	0.23	2.701	0.007
Trust in peers → Autonomous motivation	+	0.04	0.468	<u>0.640</u>
Affective community commitment → Autonomous motivation	+	0.41	3.554	***
Trust in the user evaluation mechanism → Autonomous motivation	+	0.26	2.809	0.005
Trust in user evaluation mechanism → Controlled motivation	+	0.12	1.449	<u>0.147</u>
Normative community commitment → Autonomous motivation	+	0.28	2.791	0.005
Normative community commitment → Controlled motivation	+	0.46	5.422	***

Note: *** $p < 0.001$

5.7.4 Coefficient of Determinations

As the focus of SEM analysis is prediction, an examination of the variance of the dependent variables presented by R^2 is recommended (Meyers et al., 2013). The value of R^2 indicates the proportion of variance in the dependent variable that is actually predicted by corresponding independent variables (Hair et al., 2010). In order for a structural model to show a certain level of predictive ability, the R^2 values should be sufficiently large. According to Chin (1998a), a R^2 value of approximately 0.67 and above suggests a substantial predictive power of the structural model, about 0.33 suggesting a moderate, and 0.19 suggesting a weak predictive power.

Figure 5.4 shows that autonomous motivation and controlled motivation explained 64% of the variance in intention. Meanwhile, trust in peers, trust in the user evaluation mechanism, online reputation, reciprocity, affective community commitment, and normative community commitment were able to explain 60% of the variance in autonomous motivation. Comparably, only 31% of the variance in controlled motivation was explained by trust in the user evaluation mechanism, online reputation, reciprocity, and normative community commitment.

Based on the threshold values suggested by prior research, all of the R^2 values in this study met the minimum predictive power requirements. Moreover, intention and autonomous motivation exhibited marginal substantial predictive power while the predictive power of controlled motivation was close to moderate.

5.7.5 Testing the Moderation Effect

The moderation effects of knowledge self-efficacy on the relationships between autonomous motivation and intention and between controlled motivation and intention were tested using multigroup analysis. Two groups were created using the mean statistics of calculated knowledge self-efficacy by averaging the values of its 4 indicators (Mean = 5.47). Group 1 ($N = 154$) consisted of observations where the calculated knowledge self-efficacy value was higher than 5.47 (i.e., high knowledge self-efficacy) while group 2 ($N = 118$) was comprised of observations where the averaged knowledge self-efficacy values were lower than 5.47 (i.e., low knowledge self-efficacy).

Moderation was assessed in two ways. First, the unconstrained model was compared to a constrained model using the chi-square difference test. The overall fit of the unconstrained model was acceptable: χ^2/df ($\chi^2 = 2793.662$, $df = 1448$) = 1.929, RMSEA = 0.059, CFI = 0.821, PCFI = 0.762. Similarly, the overall fit of the constrained model was moderate: χ^2/df ($\chi^2 = 2845.894$, $df = 1489$) = 1.911, RMSEA = 0.058, CFI = 0.820, PCFI = 0.783. The chi-square difference between the constrained model and the unconstrained model was 52.232 (41) = 1.274 with $p = 0.112$, which shows that the two models were not significantly different.

Second, the difference in the path coefficients representing the relationships between autonomous motivation and intention and between controlled motivation and intention

were compared between high and low knowledge self-efficacy. Standardised coefficient estimates for each group and the pairwise parameter comparisons between the two groups were used to determine whether the differences between the two groups were significant. The path coefficients for autonomous motivation were significant for both high and low knowledge self-efficacy. However, the critical ratio (C.R. = -0.245) for the difference between the two parameters showed that these two path coefficients were not significantly different from each other. Likewise, despite the fact that the path coefficients for controlled motivation were insignificant for both high and low knowledge self-efficacy, the critical ratio for the difference between the two parameters (C.R. = -0.292) indicated that these two path coefficients were not significantly different from each other.

Hence, it is concluded that knowledge self-efficacy has no significant moderation effect on the relationships between autonomous motivation and intention and between controlled motivation and intention.

5.7.6 Hypotheses Testing Results

As Figure 5.4 shows, at the significance level of 0.05, 8 out of 16 hypotheses were supported. The effect of autonomous motivation on users' intention to get involved in evaluating the quality of knowledge contributions was significant while the effect of controlled motivation on users' intention was non-significant. Thus, hypothesis 1 is supported while hypothesis 2 is not supported. The path coefficients between reciprocity and autonomous motivation and autonomous motivation and between reciprocity and controlled motivation were 0.21 ($p < 0.01$) and -0.17 ($p < 0.05$), respectively. Hence, hypothesis 3 is supported while hypothesis 4 is not. The coefficients of the paths between online reputation and autonomous motivation and between online reputation and controlled motivation were 0.20 and 0.24, respectively, at the significance level of 0.01. The results indicate that hypotheses 5 and 6 are supported.

Surprisingly, trust in peers had no significant effect on either autonomous motivation or controlled motivation. As a result, hypotheses 7 and 8 are not supported. It was also not expected that trust in the user evaluation mechanism would have no significant effect on controlled motivation despite a path coefficient of 0.12. However, as expected, trust in the user evaluation mechanism had a positive and significant influence (path coefficient

= 0.26, $p < 0.01$) on autonomous motivation. Thus, hypothesis 9 is supported while hypothesis 10 is not supported.

Hypothesis 11 is supported because the path coefficient between affective community commitment and autonomous motivation was found to be 0.41 with a significance level of 0.001. However, hypothesis 12 is not supported because of the existence of a non-significant path coefficient value between affective community commitment and controlled motivation. However, at the significance level of 0.001, the path coefficients between normative community commitment and autonomous and between normative community commitment and controlled motivation were 0.28 and 0.49, respectively, which supports hypotheses 12 and 14. Surprisingly, hypotheses 15 and 16 are not supported. There was no statistical support to prove the existence of a moderation effect of knowledge self-efficacy on the relationship between autonomous motivation and intention and between controlled motivation and intention.

To conclude, results of testing the proposed structural model based on the analysis of the 272 observations show that 8 hypotheses are supported, as summarised in Table 5.11.

Table 5.11. Summary of Hypotheses Testing Results

Hypothesis	Standardised path coefficient	Significance level	Hypothesis testing result
H1: Autonomous motivation → Intention	0.79	***	Supported
H2: Controlled motivation → Intention	-0.07	n.s.	Not supported
H3: Reciprocity → Autonomous motivation	0.21	**	Supported
H4: Reciprocity → Controlled motivation	-0.18	*	Not supported
H5: Online reputation → Autonomous motivation	0.20	**	Supported
H6: Online reputation → Controlled motivation	0.23	**	Supported
H7: Trust in peers → Autonomous motivation	0.04	n.s.	Not supported
H8: Trust in peers → Controlled motivation	0.01	n.s.	Not supported
H9: Trust in the user evaluation mechanism → Autonomous motivation	0.26	**	Supported
H10: Trust in the user evaluation mechanism → Controlled motivation	0.12	n.s.	Not supported
H11: Affective community commitment → Autonomous motivation	0.41	***	Supported
H12: Affective community commitment → Controlled motivation			Not supported
H13: Normative community commitment → Autonomous motivation	0.28	**	Supported
H14: Normative community commitment → Controlled motivation	0.46	***	Supported
H15: Moderation effect of knowledge self-efficacy on the relationship between autonomous motivation and intention			Not supported
H16: Moderation effect of knowledge self-efficacy on the relationship between controlled motivation and intention			Not supported

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, n.s. not significant

5.8 Summary of Chapter Five

This chapter presented the procedure and the results of analysing the data collected from the web-based survey. The first section of this chapter contained a detailed description of the data preparation procedures which were conducted using SPSS Version 20. This section also reported the examination of the raw data for univariate and multivariate outliers, normality, homoscedasticity and linearity. The results of data screening showed that the dataset was suitable for conducting the following statistical analyses.

The second section included the examination of the measurement model. The examination results showed that the measurement model demonstrated a sufficient fit to the data. The attempts to increase content validity of the measurement model were discussed. In addition, factor loadings of each item on the underlying construct and the AVEs of all the constructs demonstrated satisfactory discriminant and convergent validity. Furthermore, the internal consistency among all items of each construct suggested adequate construct reliability.

The third section explained the validation of the structural model. The structural model was respecified and moderately fit the data. 16 hypothesised relationships were tested, among which 10 were supported by the results. Discussions on the main findings based on the results of hypothesis testing are presented in this next chapter.

CHAPTER Six: Discussion of Results

6.1 Chapter Overview

This chapter presents a detailed discussion on key research findings based on the results presented in the previous chapter. The second section provides an overview of the key findings. The third section discusses the relationship between motivation and users' intention to evaluate the quality of knowledge contributions in professional online communities. The fourth section presents discussions on the relationships between social factors and motivation. Based on the discussions in the third and fourth sections, the fifth section discusses the motivational process underlying users' intentional participation in the evaluation of knowledge contribution quality. The last section is a brief summary of this chapter.

6.2 Key Findings

People increasingly turn to professional online communities to obtain knowledge that can be useful for accomplishing their work. This phenomenon invokes the need for a professional online community to provide easily accessible high-quality knowledge. Fulfilling this need benefits its users and is critical to the success of the community. To this end, professional online communities rely on a large number of users to collaborate in evaluating the quality of knowledge contributions as a pragmatic approach to maintaining high-quality knowledge. This is because active user involvement in knowledge contribution evaluation helps the community to remain a reliable and resourceful platform for users to accomplish the knowledge-seeking task efficiently. Therefore, it is important to understand users' motivation behind their willingness to become involved with the evaluation of the quality of knowledge contributions in professional online communities.

This study attempts to contribute to this research area by developing and validating a theoretical model to understand the motivational process underlying users' intention to do so, particularly by means of providing feedback on the knowledge they have accessed.

The research model integrates SET, CT, and SDT to explain a motivational process to evaluate the quality of knowledge contributions in professional online communities.

Overall, the findings suggest that the theoretical model can be very helpful in understanding users' intention to evaluate the quality of knowledge contributions in professional online communities. The model has strong explanatory power, with 64% of the variance in users' intention being explained by the model. Nine of sixteen hypothesised relationships associated with the research model are supported, with the majority of them at the significance level of $p < 0.05$. A summary of the key findings is presented in Table 6.1.

The results show that different types of motivation (i.e., autonomous motivation and controlled motivation) have different effects on users' behavioural intention. Specifically, in the context of professional online communities, users' autonomous motivation is a strong predictor of their behavioural intention to become involved in the evaluation of the quality of knowledge, whereas controlled motivation does not seem to be associated with intention. Moreover, results of this study exhibit that users' perceived knowledge self-efficacy does not influence either type of motivation towards their willingness to evaluate the quality of knowledge contributions.

A number of social factors appear to influence autonomous motivation and controlled motivation differently. To be specific, reciprocity, online reputation, trust in the user evaluation mechanism, and affective and normative community commitments are likely to play a significant role in users' autonomous motivation. Together, these five factors account for 60% of the variance in autonomous motivation. Meanwhile, 32% of the variance in controlled motivation is explained by three social factors in the research model, with the effect of reciprocity being negative and that of online reputation and normative community commitment being positive. Unexpectedly, trust in peers seems to play no immediate role in explaining autonomous motivation or controlled motivation.

The research model provides insights on the motivational process underlying user participation in the evaluation of the quality of knowledge contributions in professional online communities. While autonomous motivation is the only type of motivation playing an important role, social factors involved in the motivational process include reciprocity, online reputation, trust in the user evaluation mechanism, and affective and normative community commitment. These findings are discussed in more detail in the following sections, which are organised around the research questions.

Table 6.1. Summary of Key Findings and Research Questions

Research question	Findings
Main research question: How users can be motivated to become involved in the evaluation of the quality of knowledge contributions in professional online communities?	Users' intention to become involved is influenced by their autonomous motivation which in turn is influenced by social factors such as reciprocity, online reputation, trust in the user evaluation mechanism, and affective, and normative community commitment.
Sub research question 1: How does motivation influence user intention to become involved with the evaluation of the quality of knowledge contributions in professional online communities?	Autonomous motivation positively affects intention.
Sub research question 2: How do social factors influence user motivation to evaluate the quality of knowledge contributions in professional online communities?	<ul style="list-style-type: none"> • Reciprocity, online reputation, trust in the user evaluation mechanism, and affective, and normative community commitment positively affect autonomous motivation. • Online reputation and normative community commitment positively affect controlled motivation. • Reciprocity negatively affects controlled motivation.

6.3 A Motivational Process

The findings of this study answer the main research question by elaborating on a motivational process underlying users' intention to become involved in the evaluation of the quality of knowledge contributions in professional online communities. Such a motivational process is depicted in Figure 6.1. Within such a motivational process, users' intention to participate in the evaluation activity is affected by their autonomous motivation, which is in turn influenced by a number of social factors. These factors include reciprocity, online reputation, trust in the user evaluation mechanism, and affective and normative community commitment.

This motivational process supports the findings of Oyefolahan and Dominic (2013) and Oyefolahan et al. (2012) in that autonomous motivation represents the sole type of motivational orientation with a strong impact on behavioural outcome. While Oyefolahan et al.'s two studies show how technological factors can affect autonomous motivation, the motivational process in this study shows how autonomous motivation can be affected by social factors. A detailed elaboration on the motivational process in relating to the two sub research questions is presented in the following sections.

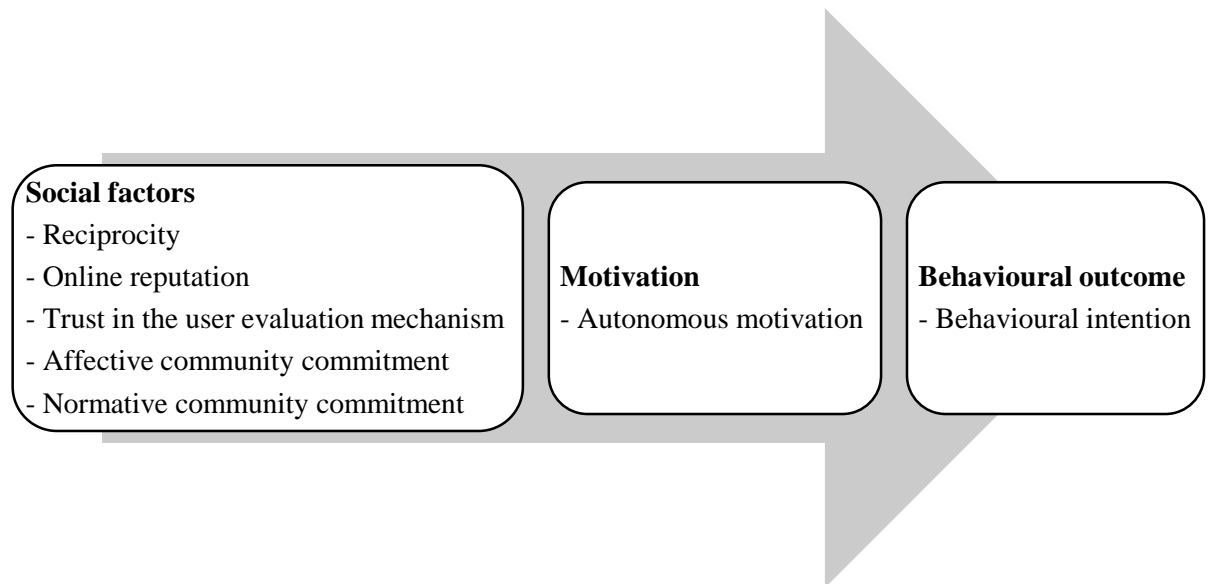


Figure 6.1. A motivational process underlying user intention toward becoming involved in the evaluation of the quality of knowledge contributions in professional online communities

6.4 The Role of Motivation in Behavioural Intention

The first sub research question concerns the relationships between different types of motivation and users' intention to become involved with the evaluation of knowledge contribution quality in professional online communities. This sub research question relates to individual orientations of motivation, which include autonomous motivation and controlled motivation. The results of examining the effect of motivation on behavioural intention reveal that autonomous motivation has a positive and profound effect on user intention to evaluate the quality of knowledge contributions in professional online communities; whereas controlled motivation does not have an influence on user intention. The results also show that users with high and users with low perceived knowledge self-efficacy show no difference in their motivation towards the intention to become involved with evaluating knowledge contribution quality.

The findings suggest that autonomous motivation leads to better positive behavioural outcomes than controlled motivation (Gagné, 2009). According to SDT, a higher level of self-determined motivation is likely to contribute to greater behavioural intention (Deci & Ryan, 2000). Because autonomous motivation represents greater self-determination motivation than controlled motivation, it is predictive of enhanced behavioural outcomes (Deci & Ryan, 2000). Ke and Zhang (2010) find that identified and introjected

motivations are positively related to the users' task efforts in online communities; however, external motivation is negatively related to task effort. The authors' tests of different types of motivation show that identified and introjected motivations have higher levels of self-determined motivation than external motivation.

Particularly, autonomous motivation is superior to controlled motivation when it comes to motivating voluntary activities (Gagné et al., 2003). Since user participation in the evaluation of the quality of knowledge contributions are voluntary, autonomous motivation is likely to strongly predict users' intention to take part in the evaluation activity. In addition, when users feel that their participation is important to help prove that the community is a resourceful place (Wang & Clay, 2012), they tend to volitionally adapt to the value of this behaviour (Deci & Ryan, 2000). When users deeply internalise the values of the behaviour, they are likely to be autonomous towards behavioural intention (Vansteenkiste et al., 2010).

6.5 The Role of Social Factors as Antecedents of motivation

The second sub research question of this study concerns the relationships between social factors and motivation. This study identifies six social factors that appear to affect users' motivation. They are reciprocity, online reputation, trust in peers, trust in the user evaluation mechanism, affective community commitment, and normative community commitment. Overall, reciprocity, online reputation, trust in the user evaluation mechanism, affective community commitment, and normative community commitment explain 60% of the variance in autonomous motivation. Meanwhile, 32% of the variance in controlled motivations is explained by reciprocity, online reputation, and normative community commitment.

Reciprocity

The results of this study suggest that users' autonomous motivation is more likely to be enhanced when they possess a higher level of reciprocal expectation. By contrast, controlled motivation is more likely to be suppressed for users who have a higher level of reciprocal expectation. From a social exchange perspective, even though a user's contribution is not directly reciprocated by the recipient, but by a third party, he or she is

still willing to contribute to the community because of generalised reciprocity (Wasko & Faraj, 2005). Hence, users who have benefited from others' evaluation results are more likely to give something back in return in order to sustain ongoing mutual benefits. However, because encouraging users to become engaged with the evaluation of the quality of knowledge contributions occurring in an environment that has a strong sense of collaboration and cooperation among users, reciprocity can lead to a decrease in users' controlled motivation to become involved (Kankanhalli et al., 2005).

Online Reputation

Results of this study show that online reputation can be predictive of both autonomous motivation and controlled motivation. In general terms, online reputation can be related to extrinsic motivation (e.g., Hung et al., 2011; Lin, 2007; Vuori & Okkonen, 2012). Results from this study further such an understanding by suggesting that online reputation can be linked with more than one regulatory style of extrinsic motivation that concurrently falls into both autonomous motivation and controlled motivation. This is because among different types of extrinsic motivation, identified and integrated extrinsic motivations are considered autonomous while introjected and external motivations are controlled (Vansteenkiste et al., 2010).

The presence of online reputation can lead users to feel honoured and, as a result, experience some pleasure (Cho et al., 2010). Meanwhile, gaining online reputation signifies one's contribution to the evaluation of knowledge contribution quality is publicly acknowledged, which can increase one's sense of self-worth, especially when ranked highly for participation (Hung et al., 2011). In this case, online reputation is probably associated with an identified regulation which belongs to autonomous motivation (Ryan & Deci, 2000a).

Reputation can also affect one's self-esteem (Hung et al., 2011), which indicates that online reputation can serve as a kind of reward, possibly involving ego-enhancement (Wasko & Faraj, 2005). This is because one the goals of users who evaluate knowledge contribution quality is to increase their own benefits (Cheung & Lee, 2012), especially when the reputation they have gained in the online environment can be extended to the off-line professional community (Wasko & Faraj, 2005). In this scenario, online

reputation is linked to an introjected regulatory style of controlled motivation (Ryan & Deci, 2000a).

Trust in Peers and Trust in the User Evaluation Mechanism

Results of this study reveal that a higher level of trust in the user evaluation mechanism can result in an increase in users' autonomous motivation, while having no association with controlled motivation. Such results suggest that trust in the management schemes of a community increases one's motivation to volitionally perform activities, especially activities which are beneficial to the community (Renzl, 2008). Under this condition, users do not feel their actions are controlled by external reasons (Li et al., 2012). Because the user evaluation mechanism is fair in terms of wide user participation, users are more likely to be motivated to contribute to the evaluation of the knowledge contribution quality (Renzl, 2008). When users trust the user evaluation mechanism, they tend to be autonomously motivated to evaluate the quality of knowledge contributions in professional online communities. Meanwhile, contributing to the quality of knowledge contributions demands users to be more dedicated to this task, rather than being self-centred (Peddibhotla & Subramani, 2007). Hence, trust in the user evaluation mechanism does not necessarily increase users' feeling of self-worth when participating in evaluating the quality of knowledge contributions (Lou et al., 2013).

However, trust in peers is not associated with either autonomous motivation or controlled motivation. This is probably because users' trust in peers is transferred to their trust in the user evaluation mechanism. According to trust transfer theory (Stewart, 2003), different types of trust can be transferred from one to another in online settings, especially from trust in peer users to trust in a collective and related concepts. For example, Chen et al.'s (2014) results reveal that users' trust towards others can be transferred to their trust in a community. Users engaged in evaluating the quality of knowledge contributions are probably concerned more about the functioning, survival, growth, and success of a professional online community than about personal benefits (Chiu et al., 2006). In other words, users' expectations of support from others and making friends may weaken, giving way to a desire to help the community at large. This can also be explained by the fact that it is sometimes difficult for users to establish interpersonal trust in professional online communities. Because these communities are platforms that allow open access, anonymous, and voluntary participation, users are mostly strangers to each other and they

usually do not have well-established personal relationships (Lu & Yang, 2011). If users spend only a few hours per week in an online community, they may not have enough time to interact with others or to establish firm relationships with others (Lyu, 2012). As a result, the strength of interpersonal trust is likely to be weak.

On the other hand, trust in peers tends to influence users' level of trust towards the management of an online community (Renzl, 2008). In a professional online community, a high level of trust in other users helps users to develop a positive impression of the community (Fang & Chiu, 2010; Lin et al., 2009). When this happens, users are likely to believe that the community can offer effective management mechanisms to maintain a healthy environment for knowledge sharing (Fang & Chiu, 2010; Tsai et al., 2012). As a consequence, users' trust in peers can be transferred to their trust in the user evaluation mechanism which involves a group of peers.

Affective and Normative Community Commitment

Results from this study indicate that an increase in the feeling of affective community commitment is likely to lead to enhanced autonomous motivation, while remaining unrelated to controlled motivation. When users identify themselves as part of a community, they tend to align their goals with those of the community (Hars & Ou, 2002). Because of this, users who feel attached to a community are more inclined to believe that helping others and the community at large is the right thing to do, rather than feeling compelled to help (Cho et al., 2010). For example, when users' feelings of affective commitment to the community grow stronger, they have an increased tendency to contribute knowledge of high quality (Lu & Yang, 2011). Affective community commitment is also greatly related to the identification process of autonomous motivation (Deci & Ryan, 2000). As a result, users are likely to feel autonomous towards volitionally evaluating the quality of knowledge contributions because their participation in this activity is beneficial for the community and others.

Results of this study show that normative community commitment plays an important role in affecting user motivation to perform activities in a collective in both autonomous and controlled manners. When users have a sense of normative community commitment, they recognise and accept the values of evaluating the quality of knowledge contributions in professional online communities. According to SDT, when people understand and

endorse the value and significance of a behaviour, they demonstrate that behaviour as it has become part of their identity (Deci & Ryan, 2000). Because of this, they are more inclined to be motivated autonomously.

Normative community commitment can also be related to a behaviour that is performed to avoid a feeling of guilt. This guilt may be due to the moral pressure to behave in a certain way (Ryan & Deci, 2000a). Although in professional online communities users are not bounded by the norms and requirements of any particular organisation, they may still feel morally committed to contribute to the community (Wasko & Faraj, 2005). For example, Leonard et al. (2004) show that one's sense of normative community commitment is a significant indicator of the intention to perform an activity. When people behave to avoid a feeling of guilt, they are motivated because of introjection, which indicates controlled motivation.

6.6 Summary of Chapter Six

This chapter reflected the main findings of this study based on the hypothesis-testing results. These results were discussed with reference to the main research question and two sub research questions and in relation to relevant previous studies. The results suggest that users' intention to evaluate the quality of knowledge contributions in professional online communities is mainly influenced by autonomous motivation. In turn, autonomous motivation can be affected by reciprocity, online reputation, trust in the user evaluation mechanism, and affective and normative community commitment. Furthermore, online reputation, and normative community commitment have positive associations with controlled motivation, while reciprocity has a negative association. Moreover, trust in peers is found to be unrelated to either autonomous or controlled motivations.

In the next chapter, the theoretical and practical implications of these findings are discussed along with considerations of the limitations of this study. Suggestions for further research are also presented in the following chapter.

CHAPTER Seven: Conclusions

7.1 Summary of the Study

The purpose of this study is to examine the determinants that influence users' intention to evaluate the quality of knowledge contributions in professional online communities. This study was motivated by concerns about the quality and reliability of shared knowledge in these communities (Ala-Mutka et al., 2009; Chen, J. et al., 2011). These concerns arise from the widespread use of online content among people to broaden their professional knowledge or to resolve problems that they encounter in the workplace. Collaborative User evaluation of the quality of knowledge contributions is viewed as a promising approach to maintain the provision of high quality knowledge in online communities. Particularly, encouraging active user feedback is likely to be an effective and straightforward mechanism that can help users to find high-quality content efficiently (Beschastnikh et al., 2008).

Drawing on self-determination theory (SDT) (Deci & Ryan, 2000), social exchange theory (SET) (Blau, 1964), and commitment theory (CT) (Meyer & Allen, 1991), this study develops a theoretical model to understand the motivational process underlying user intention to evaluate the knowledge contribution quality in professional online communities. Literature on knowledge management and knowledge sharing provides useful background on the role of motivation and social factors to understand user participation in professional online communities. The proposed motivational process describes a causal sequence from social factors through motivation to user intention. More precisely, two types of motivation, which are autonomous motivation and controlled motivation, are considered. Serving as the antecedents of motivation, social factors derived from SET and CT include reciprocity, online reputation, trust in peers, trust in the user evaluation mechanism, affective community commitment, and normative community commitment.

Data was collected from a web survey to empirically validate the theoretical model. Participants were recruited from a list of selected professional online communities. In total, a dataset of 272 was used to test the research model. SEM techniques were used to

analyse the data. The results support nine of the sixteen hypothesised relationships in the research model.

There are three key findings based on the results from testing the research model. First, this study shows that professionals' intention to evaluate the quality of knowledge contributions can be strongly influenced by autonomous motivation, not by controlled motivation. Second, users' autonomous motivation can be affected by their perceptions of reciprocity and online reputation, their trust in the user involvement mechanism, as well as affective and normative community commitments. Third, users' controlled motivation is subject to the influence of their perceptions towards reciprocity and online reputation and the normative community commitment. Based on these findings, this study identifies a motivational process to demonstrate the effect of numerous social factors on users' autonomous motivation which, in turn, affects user intention to engage in assessing the quality of knowledge contributions in professional online communities. These findings are mostly consistent with the theories and extant research, upon which significant academic and practical implications can be drawn.

7.2 Theoretical Implications

This study makes a number of academic contributions in the area of managing the quality of knowledge contributions and user motivation to participate in professional online communities.

First, this study highlights and promotes an understanding of the significance of user involvement in evaluating the quality of knowledge contributions in professional online communities. Management of online content is recognised as one of the increasingly important topics in online settings (Ziewitz & Pentzold, 2010). Prior studies have looked into the evolution (Markus, 2007), implementation (Beschastnikh et al., 2008), and implications (Lampe et al., 2007) of user involvement in managing users' knowledge contributions in online communities from a community governance's perspective. This study adds value to prior studies by stressing the importance of user involvement in the evaluation of knowledge contribution quality from a users' perspective.

In particular, this study suggests that user feedback can be a feasible means of evaluating the quality of knowledge contributions. Extant research has studied the actual impact of

user feedback, such as in the forms of voting, rating, and ranking, on how online communities manage massive users' knowledge contributions (e.g., Sarkar et al., 2012). This study emphasises the feasibility of utilising the abovementioned forms of user feedback to evaluate the quality of knowledge contributions from users' point of view. It is also suggested that, in order to popularise the user evaluation mechanism, it is important to have a deep understanding of user motivation to take part in this this meaningful and helpful community activity.

Second, this study contributes to the literature on user motivation to participate in professional online communities by adopting a motivational process perspective. In addition to emphasising the importance of investigating different types of motivation, findings from the study show that motivation interpreted in terms of motivational orientation plays an important role in the motivational process underlying user participation in professional online communities. In the context of user participation in evaluating the quality of knowledge contributions, autonomous motivation, in contrast to controlled motivation, is a salient concept to understand user intention to participate in the evaluation activity.

Since the concept of motivational orientation has been mainly used in off-line settings, findings of this study show that this concept is also applicable for understanding behavioural intention in online platforms. The motivational orientation concept has also been widely adopted to study behaviours which involve individual benefits. Results from this study reveal that this concept is also appropriate to investigate user behaviour involving benefits for the community.

Third, findings from this study show that social factors also play an important role in understanding the motivational process. Previous studies have often explored the direct influence of social factors (e.g., reciprocity, reputation, and trust) on behavioural intention. This study demonstrates that the impacts of social factors on behavioural intention can be channelled through different motivational orientations. Because motivational orientation involves an individual's inner psychological process, this study answers Lam et al.'s (2008) call for examining social factors together with individual differences represented by motivation orientation in the self-determination of one's behaviour. By including affective and normative community commitments in the theoretical model, this study empirically tests Meyer et al.'s (2004) proposition that commitment is an important energising force in the motivation process.

Fourth, this study shows that SDT can be a meaningful and useful theory for investigating user motivation in professional online communities. By adopting SDT, this study sheds light on why some users are willing to evaluate the quality of knowledge contributions and others are reluctant to do so from a motivational orientation perspective. Prior studies in the context of professional online communities have provided an extensive and solid theoretical background to investigate users' motivation using SDT as the theoretical foundation. The dominating use of SDT is its distinction between intrinsic and extrinsic motivations in studies conducted by Hung et al. (2011), Jeon et al. (2011), Lin (2007), and Roberts et al. (2006b), among others. Another approach to theorise SDT in a professional online community context is the subtypes of extrinsic motivation. Some examples include Ke and Zhang (2010), Li (2012), Lou et al. (2013), Malhotra et al. (2008). Contributing to the literature on user motivation in professional online communities, this study demonstrates the usefulness of studying motivation in two distinguishing forms of motivational orientations, namely autonomous motivation and controlled motivation. Therefore, researchers who intend to explain or predict user intention to participate in online community activities may consider SDT as a theoretical framework, especially taking a motivational orientation perspective, to conduct an in-depth investigation of motivation in their studies.

Findings from this study indicate, within the motivational process, that some social factors (i.e., reciprocity, online reputation, and normative community commitment) appear to be linked to not only autonomous motivation, but also controlled motivation. These findings could be a result of the existence of various regulatory styles of extrinsic motivation, another key concept of SDT. Hence, it is suggested that further research should investigate the role of regulation styles of motivation to deepen the understanding of the motivational process.

Fifth, the findings highlight the utility of an integrated research model based on SDT, SET, and CT for studying the motivational process towards user behavioural intention in professional online communities. The integrated research model as demonstrated in this study explains 64% of the variance of users' behavioural intention to assess the quality of knowledge contributions. In particular, inspired by SDT, the research model employs a motivational process approach, which incorporates a perspective of users' inner self and takes into consideration the possible social-contextual effects. A social exchange view of the user evaluation activity helps explain how users are motivated to contribute to the long-term success of a community with an expectation of gaining further benefits from

the knowledge repository of the community in return. Integrating community commitment in the research model demonstrates how users' affection and feelings of obligation towards a community influence their community participation for the benefits of the community. Thus, an integrated research model is helpful for the researcher in revealing the complex psychological process through which one becomes motivated. For example, the multifaceted impact of reciprocity and normative community commitment on both autonomous motivation and controlled motivation cannot be fully understood without adopting the integrated research model proposed and tested in this study.

Finally, findings from this study add new understanding on the complex notion of trust in a professional online community. In this study, trust in peers demonstrates no association with either autonomous motivation or controlled motivation, whereas trust in the user involvement mechanism is highly associated with both. In this regard, these findings might contribute to Stewart's (2003) trust transfer theory in particular, which evolved through a study of the trust transfer process between customers when organisations opened a web-based channel to do business with them. Since its inception in Stewart's discussion, the concept of trust transfer has been used to understand how trust in one entity can be affected by trust in some other entity in the context of e-commerce (e.g., Chen et al., 2014; Lu et al., 2010). Findings of this study demonstrate a likely trust transfer process in which users may build a trust in an entity (i.e., trust in the user evaluation mechanism) on the basis of their trust in another entity (i.e., trust in peers). In this circumstance, this study extends the use of trust transfer theory to the context of professional online communities.

7.3 Practical Implications

The findings of this study also have important implications for the practitioners of professional online communities. This study may provide strategic insights into how to encourage user engagement in evaluating the quality of knowledge contributions for competitive advantages. The findings may generate practical suggestions on how to improve the implementation of the user evaluation mechanism. This study brings an awareness among users to collaborate with the aim of increasing the value of the public knowledge repository.

First, useful suggestions could be made to managers of professional online communities on how to improve the accessibility of quality and reliable knowledge contributions. Managers should encourage users to help with the evaluation of the quality of knowledge contributions for the long-term development of professional online communities. Meanwhile, managers may also need to make an effort to ensure the reliability of the results of the user evaluation, thus increasing users' trust in the user evaluation mechanism. Otherwise, if knowledge seekers see untrustworthy results in user evaluations, they may decrease their visits to the community and eventually may leave the community.

Second, some helpful design guidelines could be generated for designers to support the effective implementation of the user evaluation mechanism. For example, the settings of professional online communities should encourage users to volitionally endorse the values of the user evaluation mechanism and to avoid creating a sense of being controlled in their actions. This is because differences in users' motivational orientation result in different ways of collaboration in an environment mediated by human-computer interaction (Wang, X. et al., 2012). It may be necessary to explicitly state the importance of the user evaluation mechanism in the community guidelines when using a professional online community in order to make users aware of the value of their collaborative participation in the evaluation activity. In the statement, the voluntary nature of user participation should be emphasised.

Another possible approach to promote the effectiveness of the user evaluation mechanism would be to maintain an environment that nurtures users' motivation. As users' perceptions of reciprocity, online reputation, and normative community commitment appear to be important reasons for users to provide feedback on the quality of the knowledge contributions, designers might need to develop some new features or to improve current features to raise such perceptions and feelings. For example, developers should develop techniques that help build user reputation in the community. It might be even more helpful to build bridges between online reputation and physical reputation within a particular professional domain. However, users who perceive that evaluating the quality of knowledge contributions may raise their reputation in professional online communities are likely to increase their motivation toward becoming involved in the evaluation activity. Therefore, a reputation system should be introduced with careful consideration of a trade-off point of different degrees of internalisation of the value of the behaviour.

Lastly, bringing an awareness of the significance of user feedback among users may guide knowledge seekers to make extra efforts to give their feedback on the quality of knowledge contributions they have accessed. This is possible, especially for users who have taken advantage of others' feedback for identifying knowledge contributions of high quality. The reason is, when users have a sense of reciprocity, they tend to be willingly to perform an activity that could benefit the community and its users.

7.4 Limitations of the Study

While the results of this study provide insightful implications for research and practice, these results should be viewed with respect to certain limitations.

First, the cross-sectional design in the data collection process may limit the implications of the findings. Because trends and technological specifics of professional online communities change at a rapid pace, users' behavioural intention in these communities may also change accordingly. However, because the empirical data used in this study were collected at a specific point in time, readers are encouraged to exercise caution if extending the findings from this study to understand possible changes in user intention over time (Rindfleisch et al., 2008). In addition, it may be difficult to infer appropriate causal relationships based on cross-sectional data (Rindfleisch et al., 2008). Thus, future studies may find it necessary to observe any changes in user intention to evaluate the quality of knowledge contributions over time. By doing this, the causal conclusions derived from the findings of this study can be strengthened.

Second, it is yet to be determined whether the findings of this study can be generalised to organisation-sponsored professional online communities. Professional online communities identified in the sampling process consisted only of those that were user-initiated. None of the organisation-sponsored professional online communities that the researcher made contact with permitted the researcher to post the survey invitation in their communities. This limits the practical contribution of the findings to organisation-sponsored professional communities. That is to say, managers and designers of organisation-sponsored professional online communities should interpret the practical suggestions based on the results of this study with caution. Hence, further research is needed to assess the validity of the theoretical explanation in organisation-sponsored professional online communities.

Finally, the findings may have been impacted by sample selection bias. Participants taking part in the survey were those using the professional virtual communities at the time of the survey. The survey was unable to capture responses from those who were users of the community but who did not visit the community during the survey period or were inactive in knowledge sharing. Those users may have different opinions. However, such a sample selection bias may not be a serious concern. This is because users who participated in the survey were likely to be genuinely interested in sharing knowledge with others in their professional online communities. They are more likely to be willing to evaluate the quality of knowledge contributions than inactive users.

7.5 Implications for Further Research

This study concludes by looking into the future and providing a few directions for further research. These research directions are partly based on the findings, which suggest further investigation or testing, and partly based on the limitations of the research.

First, future studies could integrate other key concepts of SDT in the research model to deepen our understanding of the motivational process. Results of this study suggest that some social factors (i.e., reciprocity, online reputation, and normative community commitment) are associated with both autonomous motivation and controlled motivation. These results could be interpreted using various regulatory styles postulated in OIT, a mini-theory of SDT. Hence, exploring the links between regulation styles and behavioural intention, as well as those between social factors and regulation styles, may yield meaningful results. These results may promote insightful understanding of the motivational process.

Second, future research could investigate users' actual evaluation behaviour in two ways. This thesis reports user intention to evaluate the quality of knowledge contributions instead of actual evaluation behaviour. Future research could compare the differences between the impact of motivation on behavioural intention as well as on actual behaviour by using a similar research model (i.e., intention would be replaced with actual behaviour) and follow a similar research methodology. Furthermore, further research could extend the research model by establishing a relationship between behavioural intention and actual behaviour to precisely examine how the self-reported intention of user participation in evaluating the quality of knowledge contributions predicts actual evaluation behaviour.

Third, the relationship between trust in peers and trust in the user involvement mechanism could be further studied when explaining user participation in evaluating the quality of knowledge contributions in professional online communities. To this end, trust transfer theory (Stewart, 2003) could be employed, possibly together with a longitudinal research design, which focuses on observing the relational exchange between the two types of trust.

Last but not the least, future research could test the proposed research model in other types of online communities, specifically organisation-sponsored professional online communities. For that purpose, participants of the survey could be recruited from among employees of physical organisations who use organisation-sponsored professional online communities that provide open access to the public, instead of through online platforms.

7.6 Concluding Remarks

This study started with an objective to investigate user motivation underlying the intention to evaluate the quality of knowledge contributions in professional online communities. Following a motivational process perspective, a systematic examination of the literature on user motivation in professional online communities was conducted. Based on the literature review, a motivational process was derived to demonstrate a causal sequence from social factors through two types of orientation-based motivation (i.e., autonomous motivation and controlled motivation) to the user intention of evaluating knowledge contribution quality in professional online communities. Drawing from SET and CT, social factors of interest to this study included reciprocity, online reputation, trust in peers, trust in the user evaluation mechanism, and affective and normative community commitments.

The proposed research model was tested using 272 responses to a web-based survey targeting users of professional online communities. The test results suggest a causal sequence within the motivational process – from social factors through autonomous motivation to the intention of becoming engaged in the evaluation of the quality of knowledge contributions. Specifically, autonomous motivation is a key contributor of user intention to become involved in the evaluation activity. In turn, autonomous motivation can be influenced by users' perceptions of reciprocity and online reputation, their trust in the user involvement mechanism, as well as affective and normative community commitments. Although there is no association found between controlled

motivation and user intention, users' controlled motivation can be affected by their perceptions of reciprocity and online reputation and the normative community commitment.

Findings of this study have significant academic and practical implications. From an academic point of view, this study contributes to the body of literature on the evaluation of knowledge contribution quality in professional online communities by stressing the importance of user engagement by means of user feedback. More importantly, this study enriches the literature on users' motivation to participate in professional online communities by taking a perspective of users' inner psychological motivational process, where motivation in an autonomously orientated form plays an important role. Possibly, this study also contributes to current literature on trust in online settings.

From a practical point of view, based on the findings from this study, managers of professional online communities are strongly recommended to focus on encouraging users to help with the evaluation of the quality of knowledge contributions. One possible approach for encouraging users to become involved is to maintain and strengthen their trust in this collaborative evaluation mechanism. Designers of professional online communities can reap the benefit of generating possible guidelines to establish a platform that supports the effective implementation of the user evaluation mechanism. The findings of this study are also likely to bring an awareness among users of the significance of their feedback on the quality of knowledge contributions in professional online communities.

Nevertheless, the findings of this study should be interpreted with caution because of several limitations, mostly arising from the research design. For example, the cross-sectional data collected for testing the research model is inadequate to demonstrate any dynamics of the motivational process. Findings of this study may not apply in organisation-sponsored professional online communities due to the unintentional exclusion of this type of communities during data collection.

It is worth noting that findings from this study can be strengthened and extended by further investigation. One issue worth further examination is users' actual evaluating behaviour. Another meaningful topic for future research is the relationship between trust in peers and trust in the user involvement mechanism when explaining user participation. Other directions for further research include testing the research model proposed in this

study in the context of organisation-sponsored professional online communities and in different cultural societies.

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Appendices

Appendix A. Summary of Key Studies on the Role of Motivation in User Participation in Professional Online Communities

Source	Context	Antecedent	Motivational process Motivation	Consequence
Hung et al. (2011)	KMS	N/A	<ul style="list-style-type: none"> • IM: altruism • EM: economic reward, reputation feedback, reciprocity 	Knowledge sharing
Jeon et al. (2011)	Communities-of-practice	N/A	<ul style="list-style-type: none"> • IM: enjoyment in helping, need for affiliation • EM: image, reciprocity 	Attitude → Knowledge sharing intention and behaviour
Lin (2007)	Knowledge sharing among professionals	N/A	<ul style="list-style-type: none"> • IM: knowledge self-efficacy, enjoyment in helping others • EM: expected organisational rewards, reciprocal benefits 	<ul style="list-style-type: none"> • Knowledge sharing intention • Attitude → knowledge sharing intention
Li et al. (2012)	Open source software development	Leadership characteristics	<ul style="list-style-type: none"> • IM: enjoyment based, obligation based • EM: <ul style="list-style-type: none"> ○ Identified regulation ○ Introjected regulation ○ External regulation 	Contribution
Lou et al. (2013)	Online Q&A communities	N/A	<ul style="list-style-type: none"> • IM: enjoy helping, knowledge self-efficacy • Internalised EM: self-worth, learning • EM: Rewards in reputation system 	Knowledge contribution quantity and quality
Tong et al. (2007)	Online feedback systems	N/A	<ul style="list-style-type: none"> • IM: enjoyment in helping others, enjoyment in influencing the community • Internalised EM: self-enhancement • EM: economic reward 	Information contribution intention
Verhagen et al. (2012)	Virtual world (VW)	VW specific characteristics	<ul style="list-style-type: none"> • IM: entertainment value • EM: perceived usefulness 	Attitude towards use
Nov et al. (2010)	An online photo-sharing community	N/A	<ul style="list-style-type: none"> • IM: enjoyment, commitment to the community • EM: self-development, reputation building 	Participation

Source	Context	Antecedent	Motivational process Motivation	Consequence
Ke and Zhang (2010)	Open source software development	N/A	<ul style="list-style-type: none"> • EM: <ul style="list-style-type: none"> ○ Integrated motivation ○ Identified motivation ○ Introjected motivation ○ External motivation 	Task effort intention
Lin et al. (2013)	IS developers' learning business skills	Job characteristics	<ul style="list-style-type: none"> • IM • EM 	Intention to learn business skills
Roberts et al. (2006)	Open source software development	N/A	<ul style="list-style-type: none"> • IM • EM 	EM (→ social factors → IM →) Participation → performance
Wang, H. et al. (2012)	Online communities	N/A	IM	<ul style="list-style-type: none"> • System use • TAM beliefs → system use
Wunderlich et al. (2013)	IT-enabled service	N/A	<ul style="list-style-type: none"> • Internal PLOC • External PLOC 	<ul style="list-style-type: none"> • Intention to adopt • TPB constructs → intention to adopt
Malhotra et al. (2008)	IT adoption	N/A	<ul style="list-style-type: none"> • External PLOC • Introjected PLOC • Internal PLOC 	<ul style="list-style-type: none"> • Intention • TAM beliefs → attitude → intention
Gagné (2009)	Knowledge sharing within organisations	System characters → need satisfaction	Autonomous motivation	Knowledge sharing Intention → behaviour
Oyefolahan and Dominic (2013)	KMS	Technical factors	Autonomous motivation	KMS utilisation
Oyefolahan et al. (2012)	KMS	Technical factors	Autonomous motivation	<ul style="list-style-type: none"> • Knowledge sharing effectiveness • KMS utilisation

Note: EM: extrinsic motivation, IM: intrinsic motivation, KMS: knowledge management systems, MCT: motivation crowding theory, OIT: organismic integration theory, PLOC: perceived locus of control, SET: social exchange theory, TAM: technology acceptance model, TPB: theory of planned behaviour, TRA: theory of reasoned action

Appendix B. Summary of Key Studies on the Role of Social Factors in User Participation in Professional Online Communities

Source	Context	Motivational process		
		Social factors	Motivation	Consequence
Hsu et al. (2007)	Professional virtual communities	<ul style="list-style-type: none"> • Trust • Knowledge sharing self-efficacy • Personal outcome expectations • Community-related outcome 	N/A	Knowledge sharing
Chiu et al. (2006)	Professional online communities	<ul style="list-style-type: none"> • Structural dimension <ul style="list-style-type: none"> ◦ Social interaction ties • Relational dimension <ul style="list-style-type: none"> ◦ Trust norm of reciprocity ◦ Identification • Cognitive dimension <ul style="list-style-type: none"> ◦ Shared language • Shared vision 	N/A	Knowledge sharing quantity and quality
Chen and Hung (2010)	Professional virtual communities	<ul style="list-style-type: none"> • Contextual factors <ul style="list-style-type: none"> ◦ Norm of reciprocity ◦ Interpersonal trust • Individual factors <ul style="list-style-type: none"> ◦ Knowledge sharing self-efficacy ◦ Perceived relative advantage • Perceived compatibility 	N/A	Knowledge sharing and collection
Chen (2007)	Professional virtual communities	<ul style="list-style-type: none"> • Contextual factors <ul style="list-style-type: none"> ◦ Social interaction ties expectation ◦ Social interaction ties confirmation ◦ Post-usage social interaction ties • Technological factors <ul style="list-style-type: none"> ◦ Knowledge quality expectation ◦ Knowledge quality confirmation 	N/A	Intention to continue participation

Source	Context	Motivational process		
		Social factors	Motivation	Consequence
Lin et al. (2009)	Professional virtual communities	<ul style="list-style-type: none"> ○ System quality expectation ○ System quality confirmation ● Website use satisfaction 	N/A	Knowledge sharing
		<ul style="list-style-type: none"> ● Contextual factors <ul style="list-style-type: none"> ○ Norm of reciprocity ○ Trust ● Personal perceptions <ul style="list-style-type: none"> ○ Knowledge sharing self-efficacy ○ Perceived relative advantage ● Perceived compatibility 		
Chiu et al. (2011)	Open professional virtual communities	<ul style="list-style-type: none"> ● Positive knowledge quality disconfirmation ● Positive self-worth disconfirmation ● Positive social interaction disconfirmation ● Distributive justice ● Procedural justice ● Interactional justice ● Playfulness ● Satisfaction 	N/A	Intention to continue knowledge sharing
Yu et al. (2010)	Online communities for professionals	<ul style="list-style-type: none"> ● Fairness ● Identification ● Openness ● Sharing culture ● Enjoy helping ● Usefulness/relevancy 	N/A	Knowledge sharing behaviour
Cheung et al. (2013)	Online communities-of-practice	<ul style="list-style-type: none"> ● Disconfirmation of reciprocity ● Disconfirmation of helping others ● Satisfaction with expectations ● Knowledge self-efficacy 	N/A	Intention to continue knowledge sharing
Wasko and Faraj (2005)	Electronic networks of practice	<ul style="list-style-type: none"> ● Reputation ● Enjoy helping 	N/A	Knowledge contribution

Source	Context	Motivational process		
		Social factors	Motivation	Consequence
Kankanhalli et al. (2005)	Electronic knowledge repositories	<ul style="list-style-type: none"> • Centrality • Self-rated expertise • Tenure in the field • Commitment • Reciprocity • Loss of knowledge power • Codification effort • Organizational reward • Image • Reciprocity • Knowledge self-efficacy • Enjoyment in helping others 	N/A	Knowledge contribution
Yates et al. (2010)	Organisational wikis	<ul style="list-style-type: none"> • Cost in time • Benefits to personal work • Membership in core group • Community access • Task novelty • Reputation received 	N/A	Knowledge sharpening and sharing
Tsai and Cheng (2012)	Knowledge management systems for IT professionals	<ul style="list-style-type: none"> • Organisational justice • Trust • Organisational commitment • Knowledge sharing self-efficacy 	N/A	Knowledge sharing intention
Tsai et al. (2012)	Knowledge management systems for IT professionals	<ul style="list-style-type: none"> • Perceived organizational support • Organizational trust • Reciprocal relationship expectancy • Attitude toward KMS • Perceived self-efficacy 	N/A	Knowledge sharing intention
Bock et al. (2005)	Knowledge sharing within organisations	<ul style="list-style-type: none"> • Economic/ social-anticipated extrinsic rewards • Anticipated reciprocal relationships • Sense of self-worth 	N/A	Knowledge sharing intention

Source	Context	Motivational process		
		Social factors	Motivation	Consequence
Phang et al. (2009)	Online communities for knowledge sharing and learning	<ul style="list-style-type: none"> • Fairness • Affiliation • Innovativeness • Organisational climate • Subjective norm • Attitude toward knowledge sharing 	N/A	Knowledge seeking /contribution
		<ul style="list-style-type: none"> • Ease of use • System reliability • Knowledge tracking fulfilment • Social interactivity • Perception of moderator • Perceived usability • Perceived sociability 		
Zheng et al. (2013)	Information exchange virtual communities	<ul style="list-style-type: none"> • Perceived information quality • Perceived system quality • Perceived individual benefits • Satisfaction with the usage experience 	N/A	Continuance intention to consume and provide
Bateman et al. (2011)	Online discussion communities	<ul style="list-style-type: none"> • Affective community commitment • Normative community commitment • Continuance community commitment 	N/A	Reading, posting, moderating
Jin et al. (2013)	Online Q&A communities	<ul style="list-style-type: none"> • Reputation enhancement • Reciprocity • Enjoyment in helping others • Knowledge self-efficacy • Confirmation • Satisfaction with expectation 	N/A	Intention

Appendix C. Ethics Application Approval



M E M O R A N D U M

Auckland University of Technology Ethics Committee (AUTEC)

To: William Wang
From: **Dr Rosemary Godbold** Executive Secretary, AUTEC
Date: 31 May 2012
Subject: Ethics Application Number 12/109 **User Participation in the Evaluation of the quality of Knowledge Contributions in Professional Online Communities.**

Dear William

Thank you for providing written evidence as requested. I am pleased to advise that it satisfies the points raised by the Auckland University of Technology Ethics Committee (AUTEC) at their meeting on 14 May 2012 and I have approved your ethics application. This delegated approval is made in accordance with section 5.3.2.3 of AUTEC's *Applying for Ethics Approval: Guidelines and Procedures* and is subject to endorsement at AUTEC's meeting on 25 June 2012.

Your ethics application is approved for a period of three years until 31 May 2015.

I advise that as part of the ethics approval process, you are required to submit the following to AUTEC:

- A brief annual progress report using form EA2, which is available online through <http://www.aut.ac.nz/research/research-ethics/ethics>. When necessary this form may also be used to request an extension of the approval at least one month prior to its expiry on 31 May 2015;
- A brief report on the status of the project using form EA3, which is available online through <http://www.aut.ac.nz/research/research-ethics/ethics>. This report is to be submitted either when the approval expires on 31 May 2015 or on completion of the project, whichever comes sooner;

It is a condition of approval that AUTEC is notified of any adverse events or if the research does not commence. AUTEC approval needs to be sought for any alteration to the research, including any alteration of or addition to any documents that are provided

to participants. You are reminded that, as applicant, you are responsible for ensuring that research undertaken under this approval occurs within the parameters outlined in the approved application.

Please note that AUTECH grants ethical approval only. If you require management approval from an institution or organisation for your research, then you will need to make the arrangements necessary to obtain this.

To enable us to provide you with efficient service, we ask that you use the application number and study title in all written and verbal correspondence with us. Should you have any further enquiries regarding this matter, you are welcome to contact me by email at ethics@aut.ac.nz or by telephone on 921 9999 at extension 6902. Alternatively you may contact your AUTECH Faculty Representative (a list with contact details may be found in the Ethics Knowledge Base at <http://www.aut.ac.nz/research/research-ethics/ethics>).

On behalf of AUTECH and myself, I wish you success with your research and look forward to reading about it in your reports.

Yours sincerely

Dr Rosemary Godbold

Executive Secretary

Auckland University of Technology Ethics Committee

Cc: Tingting Zhang tingting.zhang@aut.ac.nz, Angsana Techatassanasoontorn

Appendix D. List of Selected Professional Online Communities

	Name	URLs	Profession
1	中国会计社区	http://bbs.canet.com.cn/	Business and administration
2	会计之家	http://bbs.accyy.com/	
3	人大经济论坛	http://www.pinggu.org/	
4	中国会计视野论坛	http://bbs.esnai.com/	
5	金库网论坛	http://bbs.jinku.com/	
6	博瑞金融论坛	http://www.brjr.com.cn/forum.php	
7	项目管理者联盟论坛	http://www.mypm.net/bbs/default.asp	
8	丁香园论坛	http://bbs.dxy.cn	Health
9	爱爱医论坛	http://bbs.iyi.com/	
10	医学教育网论坛	http://bbs.med66.com/	
11	医生圈医学网站一医学论坛	http://www.yishengquan.cn/bbs/	
12	中国软件开发联盟	http://bbs.csdn.net/home	Information and communication s technology
13	编程论坛	http://bbs.bccn.net/	
14	中国云计算论坛	http://bbs.chinacloud.cn/	
15	51CTO 技术论坛	http://bbs.51cto.com/	
16	通信人家园	http://www.txrjy.com/forum.php	
17	移动通信论坛	http://www.msccbsc.com/bbs/	
18	我爱电子技术网	http://bbs.52dianzi.com/	
19	学法网论坛	http://bbs.xuefa.com/forum.php	
20	人民法院网的法治论坛	http://bbs.chinacourt.org/	Legal, social and cultural
21	教育在线论坛	http://bbs.eduol.cn/forum.php	
22	筑龙论坛	http://bbs.zhulong.com/	Science and engineering
23	土木在线论坛	http://bbs.co188.com/	
24	中国机械社区	http://bbs.cmiw.cn/	
25	大学力学论坛	http://www.xuelixue.cn/forum.php	
26	食品论坛	http://bbs.foodmate.net/	
27	零点花园论坛	http://www.soudoc.com/bbs	Teaching
28	园丁网	http://www.100abcd.com/forum.php	
29	教学技术论坛	http://www.etthink.com/	
30	天涯论坛	http://bbs.tianya.cn/	All professions

Appendix E. Participants Information Sheet

Participant Information Sheet



Date Information Sheet Produced

30 May 2012

Project Title

User Participation in the Evaluation of the Quality of Knowledge Contributions in Professional Online Communities

An Invitation

My name is Tingting Zhang. I am a doctoral student in the Business School at the Auckland University of Technology under the supervision of Associate Professor William Wang and Dr Angsana Techatassanasoontorn. I would like to invite you to participate in my research on understanding users' intention to get involved in evaluating the quality of knowledge contributions in professional online communities. Your participation in this study is entirely voluntary and will take approximately 15 minutes of your time. You are not obliged to take part in this research if you do not feel like to. You may decide to withdraw from this study at any time before completion without any penalty.

What is the purpose of this research?

The purpose of this research is to examine the factors that may affect users' intention to evaluate the quality of knowledge contributions in professional online communities. This research will be conducted by me to complete a Doctor of Philosophy degree in Business Information Systems. The findings of this research will be presented in a thesis, conference papers, and journal articles.

How was I identified and why am I being invited to participate in this research?

You are identified as a potential participant because you are a user of a professional online community from which you can find online content useful for your work.

What will happen in this research?

Upon your agreement to participate, you will be asked to complete a short, anonymous questionnaire. The questionnaire contains questions related to your opinion on, intention to, and motivation to get involved in evaluating the quality of knowledge contributions in professional online communities. It will take approximately 15 minutes to complete. You can choose to get it done any time at your convenience. The questionnaire can be answered objectively without any pressure. If you feel at any point that you do not wish to continue participating, you are free to quit this research. The findings based on your responses will be used to produce a thesis and related conference papers and journal articles.

What are the discomforts and risks?

There are no significant discomforts or risks involved in taking part in completing the questionnaire. Your participation is entirely voluntary. You will not be asked questions relating to your values, beliefs, or culture. Please be assured that your responses are entirely confidential and will be used for research purposes only. You will not be identified in the thesis, conference papers, or journal articles.

How will these discomforts and risks be alleviated?

If you feel any discomfort, you may choose to discontinue or withdraw your participation at any time.

What are the benefits?

Your responses will be the data used to understand users' intention to get involved in evaluating the quality of knowledge contributions in professional online communities. Your participation will help me accomplish a thesis for my PhD study. The findings of this research may suggest practical improvement in the features that enable your involvement in the evaluation activity, which will possibly enrich your future experience of getting involved. In addition, the findings of this research potentially contribute to the knowledge of user behaviour in Information Systems.

How will my privacy be protected?

Your participation is anonymous. Your identity will not be required or in any other way associated with your responses. Once the research project is completed, all the information that you provide will be securely stored in a locked cabinet in an office at the Auckland University of Technology. Only the researchers who are involved in this research will be able to access the data. All data will be destroyed after six years. You will not be identified in any outputs of this research.

What are the costs of participating in this research?

There is no cost for you to participate in this research, except for approximately 15 minutes of your time.

What opportunity do I have to consider this invitation?

You will be given time to go through this information sheet prior to your decision on whether to accept this invitation to participate in this research. If you would like to make further enquiries, you can contact the researcher via the contact details provided below. You can decline this invitation if you do not feel like participating in this research. You are free to withdraw from this research at any time before completing all the questions if you would like to do so.

How do I agree to participate in this research?

Completion of the attached questionnaire will be taken as indicating your consent to participate in this research.

Will I receive feedback on the results of this research?

You may access the results of the research through the Auckland University of Technology Library. A hard copy will be stored in the Library – City Campus, and an electronic version will be freely available on the Auckland University of Technology Library data base. The results of this research are based on the aggregated responses from all the participants to ensure your anonymity. Please be assured that you will not be identified in the results of the research in any manner.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, William Wang, william.wang@aut.ac.nz, 921 9999 ext 5048. Concerns regarding the conduct of the research should be notified to the Executive Secretary, AUTEK, Dr Rosemary Godbold, rosemary.godbold@aut.ac.nz, 921 9999 ext 6902.

Whom do I contact for further information about this research?***Researcher Contact Details:***

Tingting Zhang, tingting.zhang@aut.ac.nz, 921 9999 ext 5066

Project Supervisor Contact Details:

Associate Professor William Wang, william.wang@aut.ac.nz, 921 9999 ext 5048

Approved by the Auckland University of Technology Ethics Committee on 31 May 2012,
AUTEK Reference number 12/109.

Appendix F. Contact with Administrators of Professional Online Communities

尊敬的管理员：

您好！

Dear Administrator,

我的名字叫张婷婷，我是一名在新西兰奥克兰理工大学商务法律学院的博士研究生。

My name is Tingting Zhang. I am a doctoral student in the Faculty of Business & Law at Auckland University of Technology, New Zealand.

我正在做一个关于专业人员以“投票”，“评分”，“赞”，或“举报”等方式参与评价网络社区里的专业知识的调查问卷。因为贵论坛是×××（一种专业）方面的网络社区里的泰斗，我非常希望能够邀请贵论坛的用户参与这个调查问卷。我注意到贵论坛提供让用户参与评价专业知识的方式，但使用率不高。

I am currently working on a survey related to professional workers' opinion on user involvement in evaluating the quality of online content related to their work. An example of user involvement is to "vote", "rate", "thank", or "report" a reply in a discussion thread. I would like to invite users of your Forums to participate in this survey as this Forum is one of the most popular forums among ××× (a type of profession) professionals. I also note that your Forums have functions such as "Rate Thread", "Thanks", and "Report Post" which are very useful but do not appear to be utilized often by users.

该研究的结果可以为您提供如果改进网络社区专业知识评价的方式，同时帮助用户更有效地获取有用的知识并为网络社区的成功作贡献。由研究结果得出的改进建议可以在贵论坛上公布以便您和用户查看。

The result of the study could help improve the ways in which online content can be evaluated, which in turn can help users find useful and helpful information quickly and help sustain the community. A summary of practical suggestions can be posted in this forum when the study concludes.

出于对贵论坛使用规则的尊重，我希望能获得您的许可，让我邀请贵论坛的用户参与该问卷调查。我计划将下面的邀请信息发表在论坛的休息区，用户可以自愿选择参加与否。Being aware of the guidelines for using the Forums, I would like to seek your permission to allow me to post and promote the survey invitation in Forums; for example, the Off-Topic Lounge. The survey invitation I intend to post is shown below. Participation in this survey is voluntary and anonymous.

如果您有任何疑问请尽管联系我。静候您的佳音！

Please do not hesitate to contact me if you require further information. I look forward to hearing from you.

非常感谢！

Thank you for your attention.

谨上！

Sincerely,

张婷婷

奥克兰理工大学商务法律学院

Tingting Zhang

Faculty of Business and Law

Auckland University of Technology

邮箱 Email: tzhang@aut.ac.nz

Appendix G. Invitation Message

您对评价网络社区里的专业知识又什么看法？

What is your opinion on the evaluation of the quality of professional knowledge in online communities?

欢迎您参加我们的问卷调查！

You are warmly invited to participate in a survey.

这个调查问卷是关于什么的？

What is the survey about?

这个调查问卷主要是关于您对用户参与评价网络社区里的专业知识的看法。这种类型的网络社区主要是想专业人员提供交流和学习专业知识以提高专业技能。用户参与评价的方式包括“投票”，“赞”，“举报”，以及其它类似的方式。

The survey mainly asks about your opinion on user involvement in evaluating the quality of knowledge contributions in online communities where professionals share their knowledge (e.g., Forums). Some examples of user involvement are to "rate", "thank" or "report" a reply in a discussion thread.

参与的意义

Benefit to the community

您的参与可以帮助网络社区改进评价网络上的专业知识的方式，并最终帮助您和其他用户有效地搜索和利用网络上的专业知识。由研究结果得出的改进建议可以在该网站上公布以便您查看。

Your responses will help improve the ways in which online content can be evaluated, which in turn can help users identify useful and helpful information and help sustain the community. A summary of practical suggestions can be posted in this forum when the study concludes should you be interested in the results.

如何参与？

How to participate?

该调查问卷采用完全自愿和匿名的方式。请点击下边的链接或复制链接到浏览器的地址栏开始参与。完成整个问卷需要大概 15 分钟。

Participation in this survey is voluntary and anonymous. To participate, please click on the link below or copy the link to the address bar. The survey takes about 15 minutes to complete.

问卷链接 Link to the survey: <http://bis.aut.ac.nz/survey>

联系我们

Contact us

如果您有任何问题或者愿意提供反馈信息，请联系：

If you have any questions or wish to provide feedback, please contact:

张婷婷 Tingting Zhang

邮箱 Email: tzhang@aut.ac.nz

我们衷心地感谢您的参与以及对我们的研究课题所作的贡献。

We really appreciate your participation in the survey and your contribution to our study.

注：该研究课题已获得奥克兰理工大学学术道德委员会的批准。

Note: This study has been approved by the Auckland University of Technology Ethics Committee.

Appendix H. Survey Questionnaire

用户参与评价专业网络社区里的专业知识的意愿调查

A Survey on User Participation in Evaluating the Quality of Knowledge Contributions in Professional Online Communities

您是从事一下任意一个职业专业人员吗？

Are you working in one of the following professions?

经济业务
Business and
administration

卫生
Health

信息和通信技术
Information and
communications
technology

法律业务人员
Legal, social,
cultural

☐ 是的
Yes

工程技术
Science and
engineering

☐ 不是
No

教学
Teaching

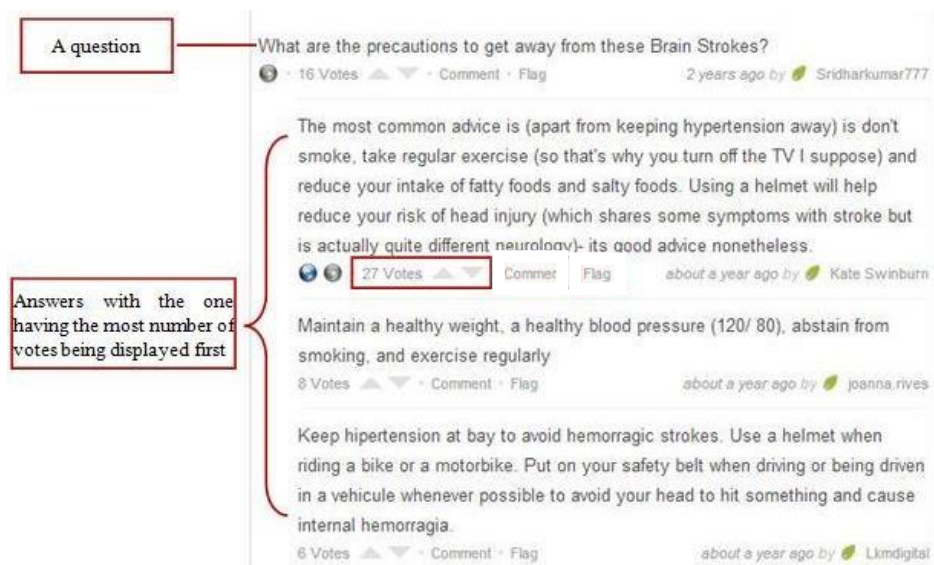
在网络时代，您可以在与您的职业相关的专业网络社区里搜寻，分享和以及交换专业知识，比如专业论坛社区（如中国会计社区，CSDN 论坛，人大经济论坛等）以及综合性网络社区中的专业知识交流模块（如百度知道里的软件开发模块，天涯论坛里的医护人员论坛，新浪博客里的各种专业博客等）。为了帮助用户迅速地找到有用的专业知识，有些专业网络社区鼓励用户参与对专业知识的评价。常见的功能包括：“点评”，“评分”，“投票”，“赞”，“顶”，“赞同”，“举报”等。下面的图片是的几个常见的用于评价专业网络社区里的专业知识的功能截图。



以下所有问题没有对错之分，请您根据真实想法填写。您的参与是匿名的，而且您所提供的信息会绝对保密。感谢您的参与和支持，我们保证调查结果仅用于学术研究，敬请放心作答。

Nowadays, you may obtain, share, and exchange professional knowledge in a professional online community such as a professional forum (e.g., technet.microsoft.com for ICT professionals, www.warriorforum.com for Internet marketing professionals and forums.nurse.com for nurses) or a part of an online community with a wide range of topics (e.g., the Engineering module in www.answers.com) etc. In order to make it easy for users to find useful and helpful information, some professional online communities invite users to provide feedback to help evaluate the quality of knowledge. Website features enabling users to give feedback may include “rate”, “vote”, “comment”, “rank”, “like”, “thank”, “report” or “flag” etc.

In the example below (the screenshot), the answer which has the most number of “vote up” is displayed at the top, making it easy for users to identify the best answer to the question identified by the community. Based on the above information, please give your responses to all questions in the following sections.



名词解释：
Definitions:

专业网络社区：指以互联网为平台，人们可以获取、分享和交换专业知识的社区群体，包括专业的论坛社区（如中国会计社区，CSDN 论坛，人大经济论坛等），也包括综合性网络社区中的专业知识交流模块（如百度知道里的软件开发模块，天涯论坛里的医护人员论坛，新浪博客里的各种专业博客等）。

A professional online community is a place where people can obtain, share, and exchange professional knowledge. It could be a professional forum; for example, technet.microsoft.com for ICT professionals, www.warriorforum.com for Internet marketing professionals and forums.nurse.com for nurses. It could also be a part of an online community with a wide range of topics; for example, the Engineering section in www.answers.com.

您使用以下功能评价专业网络社区里的专业知识的频率是什么？

Please indicate how often you use the following features in regard to online content that can help you do your work in professional online communities.

	从不 Never	一个月一次 Once a month	一个月两次及以上 A few times a month	一周一次 Once a week	一周两次及以上 A few times a week	一天至少一次 Daily
1. 评分，投票，赞或同意 Rating, Voting, Ranking, Liking, or Agree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. 举报 report or flag inappropriate content	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

第一部分：您使用网络社区的经验

Part I. Please provide some details about your experience in relation to online content.

1) 您通常是在哪里利用互联网获取与您的职业相关的专业知识？

The place where you usually search for online content which can help you do your work. (Please select all that apply):

- ☐ 办公室
Workplace
 ☐ 家里
Home
 ☐ 其它场所
Other place (Please specify)

2) 您利用专业网络社区里的专业知识学习到的技能有那些？

Types of workplace skills which you have developed by learning from online content. (Please select all that apply):

- ☐ 人际交往的技能
Interpersonal skills
 ☐ 解决问题的技能
Problem-solving skills
 ☐ 技术性的技能
Technical skills
- ☐ 管理技能
Managerial skills
 ☐ 资源管理技能
Resource management skills
 ☐ 其它技能
Other skills (Please specify)

第二部分：您对用户参与评价专业网络社区里的专业知识的态度

Part II. Your opinion on having users involved in evaluating the quality of knowledge in professional online communities.

	非常不同意 Strongly Disagree	不同意 Disagree	有点不同意 Somewhat Disagree	中立 Neutral	有点同意 Somewhat Agree	同意 Agree	非常同意 Strongly Agree
1) 我感觉专业网络社区的用户通常是值得信赖的。 I feel that users in online communities are generally reliable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2) 我感觉专业网络社区的用户通常是诚实的。 I feel that users in online communities are generally honest.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3) 我感觉专业网络社区的用户通常是有能力帮助其 他用户增长专业知识的。 I feel that users in online communities are generally competent to help others enhance their knowledge.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4) 我感觉专业网络社区的用户会在他们的能力范围之内尽量去帮助其他用户。 I feel that users in online communities will do everything within their capacity to help others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5) 我感觉用户的对专业网络社区里的专业知识的评价是值得信赖的。 I feel that users' inputs in evaluating the quality of information are reliable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6) 我感觉用户的对专业网络社区里的专业知识的评价是诚实的。 I feel that users' inputs in evaluating the quality of information are honest.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7) 我感觉鼓励用户参与评价专业知识的专业网络社区比较照顾用户对高质量专业知识的需求。 I feel that online communities inviting user feedback on the quality of information are likely to care for users' need to obtain information of high quality.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8) 我感觉鼓励用户参与评价专业知识的专业网络社区有能力帮助用户增长专业知识。 I feel that online communities inviting user feedback on the quality of information are competent to help users enhance their knowledge.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

第三部分：您对自己参与评价专业网络社区里的专业知识的看法

Part III. Your opinion on getting yourself involved in evaluating the quality of information in an online community.

	非常不同意 Strongly Disagree	不同意 Disagree	有点不同意 Somewhat Disagree	中立 Neutral	有点同意 Somewhat Agree	同意 Agree	非常同意 Strongly Agree
1) 我感觉我是这个专业网络社区的一部分。 I would feel part of the online community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2) 我对这个专业网络社区有一种情感寄托。 I would have a real emotional attachment to the online community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3) 这个专业网络社区对我有很重要的个人意义。 The online community would have a great deal of personal meaning for me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4) 我对这个专业网络社区有一种强烈的归属感。 I would feel a strong sense of belonging to the online community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5) 我与这个专业网络社区有一种很强的联系。 I would feel a strong connection to the online community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6) 我觉得我有责任评价专业网络社区里的专业知识。 I would feel an obligation to evaluate the quality of information.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7) 如果我不评价专业网络社区里的专业知识，我会觉得内疚。 I would feel guilty if I did not evaluate the quality of information.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8) 我会评价专业网络社区里的专业知识是出于一种责任感。 I would evaluate the quality of information because I had a sense of obligation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9) 我觉得我有义务评价专业网络社区里的专业知识。 I would evaluate the quality of information partly out of a sense of duty.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

第三部分：您对自己参与评价专业网络社区里的专业知识的看法（续）

Part III. Your opinion on getting yourself involved in evaluating the quality of information in an online community. (Continued)

	非常不同意 Strongly Disagree	不同意 Disagree	有点不同意 Somewhat Disagree	中立 Neutral	有点同意 Somewhat Agree	同意 Agree	非常同意 Strongly Agree
1) 评价专业网络社区里的专业知识可以增加我在这个网络社区里名气。 Evaluating the quality of information would improve my reputation among other users.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2) 当我评价专业网络社区里的专业知识的时候，比起那些不参与评价的用户，我可以得到更多的尊重。 When I evaluate the quality of information, I can gain more respect than those users who do not.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3) 评价专业网络社区里的专业知识可以增加其他用户对我的认可度。 Evaluating the quality of information would let me gain increased recognition from other users.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4) 我可以通过评价专业网络社区里的专业知识增强我在其他用户中的形象。 I can enhance my image among other users by evaluating the quality of information.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5) 我自信我有能力提供其他用户认为有价值的对专业网络社区里的专业知识的评价。 I have confidence in my ability to provide inputs that other users consider valuable to evaluate the quality of information.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6) 我具有评价专业网络社区里的专业知识所需要的专业知识或专业技能。 I have the expertise needed to provide valuable inputs on evaluating the quality of information.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7) 我是否评价专业网络社区里的专业知识并不会在其他用户的评价上产生任何差异。 It does not really make any difference whether I add to the inputs that other users are likely to provide to evaluate the quality of information.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8) 其他用户可以提供比我对专业网络社区里的专业知识的评价更有价值的评价。 Other users can provide more valuable inputs on evaluating the quality of information than I can.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

第三部分：您对自己参与评价专业网络社区里的专业知识的看法（续）

Part III. Your opinion on getting yourself involved in evaluating the quality of information in an online community. (Continued)

当我参与评价专业网络社区里的专业知识的时候

When I get involved in evaluating the quality of information in an online community,

	非常不同意 Strongly Disagree	不同意 Disagree	有点不同意 Somewhat Disagree	中立 Neutral	有点同意 Somewhat Agree	同意 Agree	非常同意 Strongly Agree
1)...我相信因为我有参与评价专业网络社区里的专业知识，在将来我需要的时候我能在这里找到高质量的专业知识。 I believe that I will find information of high quality in the future because of my own evaluations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2)...我期望其他用户会评价专业网络社区里我所需要的专业知识。 I expect other users to evaluate the quality of information that I need.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3)...我期望当我需要专业知识的时候，我能在这个专业网络社区里获得高质量的专业知识。 I expect to obtain information of high quality from the online community when I need it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4)...我相信将来我所需要的专业知识会被其他用户评价。 I believe that information I need will be evaluated by other users in the future.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

第四部分：您的参与动机

Part IV. Your motivation to get involved in evaluating the quality of information in an online community.

我会参与评价专业网络社区里的专业知识是因为

I would get involved in evaluating the quality of information in an online community because

	非常不同意 Strongly Disagree	不同意 Disagree	有点不同意 Somewhat Disagree	中立 Neutral	有点同意 Somewhat Agree	同意 Agree	非常同意 Strongly Agree
1)...我应该会喜欢参与评价专业知识。 I would enjoy doing it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2)...参与评价专业知识应该很有趣。 doing it would be fun.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3)...我认为参与评价专业知识对我自己很重要。 I think it is personally important to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4)...我个人喜欢参与评价专业知识。 I personally like doing it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5)...如果不这么做，我会觉得不安。 it would bother me if I didn't.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6)...如果不这么做，我会觉得不舒服。 I would feel bad about myself if I didn't.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7)...如果不这么做，我会觉得羞愧。 I would feel ashamed of myself if I didn't.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8)...我想要其他用户喜欢我。 I want other users to like me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9)...其他用户认为我应该这样做。 other users would think that I should do it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

第五部分：您的参与意愿

Part V. Your intention to get involved in evaluating the quality of information in an online community.

	非常不同意 Strongly Disagree	不同意 Disagree	有点不同意 Somewhat Disagree	中立 Neutral	有点同意 Somewhat Agree	同意 Agree	非常同意 Strongly Agree
1) 我打算参与评价专业网络社区里的专业知识。 I intend to evaluate the quality of information.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2) 我预测我应该会参与评价网专业网络社区里的专业知识。 I predict I will evaluate the quality of information.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3) 我计划参与评价专业网络社区里的专业知识。 I plan to evaluate the quality of information.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

第六部分：您的基本资料：以下资料仅供统计分析使用，请放心作答。

Part VI. Please provide some information about yourself.

1) 您的性别是：

Your gender:

- ☐ 男 ☐ 女
Male Female

2) 您的年龄区间是：

Please select the range which most reflects your age:

- ☐ 19 岁或以下 ☐ 20-29 岁 ☐ 30-39 岁 ☐ 40-49 岁 ☐ 50-59 岁 ☐ 60 岁或以上
19 or below 20-29 30-39 40-49 50-59 60 or above

3) 您的学历：

Your highest level of education:

- ☐ 高中以下 ☐ 高中或高职 ☐ 大学或大专 ☐ 硕士或以上
Secondary school or Technical and vocational Bachelor's Master's degree or
below education degree above

4) 您从事目前的职业的时间：

Please select the range which most reflects the years you have been working in this profession:

- ☐ 5 年或以下 ☐ 6-10 年 ☐ 11-15 年 ☐ 16-20 年 ☐ 21-25 年
5 years or below 6-10 years 11-15 years 16-20 years 21 -25 years
☐ 26-30 年 ☐ 31 年或以上
26-30 years 31 years or above

******非常感谢您的参与！******
******Thank you very much!******